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PYORRHEA DENTALIS AND ALVEOLARIS

SPECIFIC CAUSE AND TREATMENT *

C. C. BASS, M.D., AND F. M. JOHNS, M.D.

NEW ORLEANS

Pyorrhea dentalis and alveolaris is one of the most prevalent diseases of man. In our studies we have found it present to some extent in more than 95 per cent. of all adults examined. Something of its importance may be suggested by the fact that more than half of all the permanent teeth lost are lost from this disease. Each tooth lost represents a suppurative process in the mouth of at least a few or usually many years. It can hardly be possible that the harmful effect of such a disease is local only. Loss of the teeth alone is an important thing in the life of any individual. We feel quite certain that the great prevalence and importance of pyorrhea alveolaris is not now generally appreciated, even among the medical profession.

The specific cause of pyorrhea dentalis and alveolaris is endamebas.[1] These protozoa have been known for more than fifty years to inhabit the mouth, but the first published expression of opinion that they played an important part in the production of pyorrhea alveolaris was made by M. F. Barrett in collaboration with Allen J. Smith[2] during 1914. We recognized this parasite as the specific cause of the disease and began experimental treatment with emetin without knowing of the work of Smith and Barrett, but at a later date.[3] Recently Smith, Middleton and Barrett[4] have also found *Endameba buccalis* in five out of seventeen cases of diseased tonsils, and they believe this parasite may be pathogenic in these organs.

Our studies now include more than three hundred cases of pyorrhea dentalis and alveolaris. They have been directed to (1) determining the relation of endamebas as the cause of the disease; (2) the nature of the disease process; (3) the influence of emetin and ipecac as a specific remedy against the parasite—especially proper doses, best mode of administration, duration of treatment necessary, and prevention of relapse or reinfection.

ENDAMEBAS AS THE CAUSE OF PYORRHEA DENTALIS AND ALVEOLARIS

Endamebas, chiefly, if not altogether, of the species *E. buccalis*, are demonstrable by proper technic in material obtained from all pyorrhea lesions of sufficient extent to be diagnosed. They are not present in the absence of pyorrhea. They can, however, be demonstrated in material from small lesions that do not extend to the alveolar process, in which one may be unable to recognize the pus without the aid of the microscope. This is the early stage of the disease, more correctly called at that time pyorrhea dentalis, which finally involves the alveolar periosteum and then becomes pyorrhea alveolaris. The endamebas develop and live in the dead or dying tissue at the very bottom of the lesion or pocket. This should be kept in mind in examining for them (Figs. 1, 2, 3, 4, 5, 6, 7).

Material for examination is best obtained by scraping it from the bottom of the pocket with a suitable instrument. A narrow pointed toothpick will do, but a No. 22 Younger dental scaler is the best instrument we have found for general use. The material, which is chiefly pus, and which should not contain very much blood, may be diluted with five or ten times as much normal salt solution on a microscope slide, covered with a cover glass, and examined at once for motile endamebas. The usual high dry lens is suitable. They vary considerably in size and shape (Fig. 8) but with very little experience they are easily recognized. The clear ectosarc may project one or more pseudopodia, draw them back, project others in another direction, or the whole parasite may flow slowly in one direction or another. A pseudopod of ectosarc seems to always precede endosarc when it moves. Granules resembling portions of red blood cells in the endosarc help to give to the parasite an appearance similar to that of *E. histolytica*. The largest of the buccalis are about the size of the histolytica. Stained specimens are perhaps more easily diagnosed, especially by those not very familiar with endamebas. They may be stained by any one of several different methods, but the following is good enough for all ordinary purposes: (1) Spread pus on slide; (2) fix with heat; (3) pour on carbol fuchsin; (4) wash off at once; (5) stain with Loeffler's methylene blue ¼ to ½ minute; (6) wash, dry and examine with oil-immersion lens. With this stain the endo- and ectoplasm are well differentiated and the parasite can be differentiated from the much more numerous pus, epithelial, and other cells present. Their size varies from about three times the diameter of a pus cell down to smaller than pus cells. The large parasites contain in their endoplasm one or more large,

* From the Tulane College of Medicine.

* The expense for the large amount of emetin employed in our experiments was defrayed out of a grant from the Committee on Scientific Research of the American Medical Association.

1. The term endameba is used in place of entameba, proposed by Barbagallo and Casagrandi in 1897, because of clear historical priority first pointed out to us by Dr. Allen J. Smith (personal communication). Endameba was proposed for a parasitic ameba of the cockroach in 1879 by Jos. Leidy (Proc. Phila. Acad. Nat. Sciences, 1879, xxxi, 204) eighteen years before the term entameba was first proposed for parasitic amebas (Ann. d'ig. sper., 1897, vii, 103).

2. Barrett, M. F.: Preliminary Report, Dental Cosmos, 1914, lvi, 948.

3. Bass, C. C., and Johns, F. M.: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

4. Smith, Allen J.; Middleton, W. S., and Barrett, M. F.: The Tonsils as a Habitat of Oral Endamebas, THE JOURNAL A. M. A., 1914, lxiii, 1746.

dense staining bodies or granules which appear to be the nuclei of pus cells. There is usually a clear zone around each of these, and also around the entire parasite. This is apparently due to shrinkage in drying or fixing the preparation. When stained with this stain the endamebas are darker stained than the pus and other cells in the preparation. In a preparation containing many parasites they can be seen with the low power lens studding the field as blue dots. The constant presence of endamebas in the presence of the disease, and their absence in the absence of the disease, coupled with their situation in the lesions, and finally the coincident rapid recovery of the disease with the disappearance of the endamebas following treatment with a specific endamebacide, serve to establish the parasite as the specific cause beyond reasonable doubt. No more proof of the well-known specific pathogenicity of malaria plasmodia could be obtained until very recently, when we[5] were able to grow the parasite in pure cultures, with which experimental inoculations could be made and Koch's postulates satisfied.

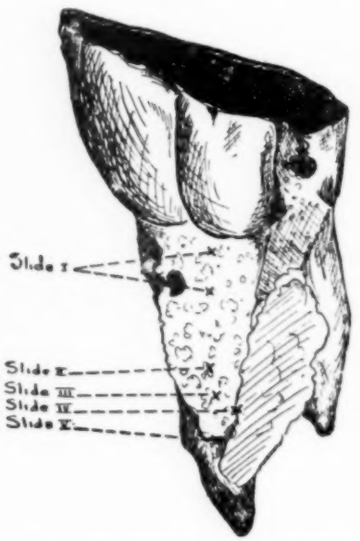

Fig. 1.—An extracted decayed root with site of amebic lesion showing location of the material obtained for photomicrographs.

DESCRIPTION OF THE DISEASE AND THE MANNER IN WHICH IT IS PRODUCED

A tooth consists of the crown (*a* Fig. 9), neck (*b*), and root (*c*). The root is deeply set in its socket in the alveolar process of the jaw bone (*g*). It is held in place by a tough peridental membrane (*d*) which serves as periosteum, covering the root and also lining the socket in the alveolar process. This periosteum is continuous with that (*f*) of the surface of the jaw bone, but it also continues up (*e*) and covers the neck of the tooth.

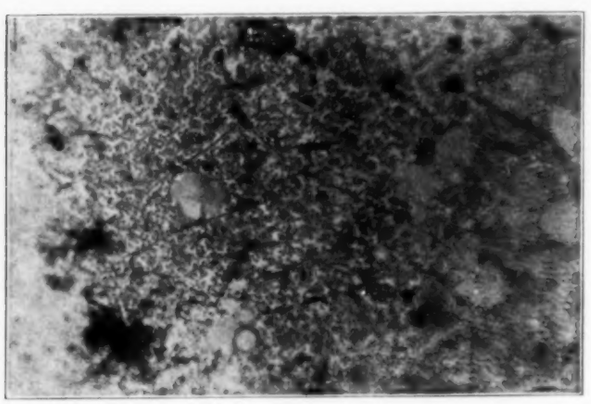

Fig. 2.—Photomicrograph, slide I a, Fig. 1, showing bacteria and debris.

Pyorrhea dentalis and alveolaris affects primarily the dental and alveolar periosteum. Whenever the periosteum is destroyed, of course, ulceration of the soft tissue attached to it occurs. Such ulceration includes granulation, pus formation and the usual tendency to bleed easily. It is not at all probable that endamebas can attack the normal tissue. Damaged tissue is necessary, very likely, and it is highly probable that the injury should furnish a kind of pocket or closed ulcer. These endamebas are not known to live on open surfaces. Any trauma such as wounding the edge of the gum with a toothpick, hard particles of food, etc., or the condition that would result from hard particles being forced between the teeth and making long-continued pressure on the soft tissue, or the pressure of ill-fitting crowns, would offer favorable conditions for establishing the endamebas. Once planted into dead or dying dental periosteum, their natural habitat, they are capable of multiplying and continuing the destructive process with the aid, no doubt, of important secondary factors. Once the infection is established the endamebas thrown off with the pus from the focus serve as a constant source of endamebas in the mouth to infect other suitable lesions whenever produced.

The infection usually begins around the back teeth and exists for months or years before the patient suspects its nature. The interdental soft tissue is most likely to be injured and to be the seat of the closed ulcers favorable for infection; therefore the disease begins there first in most instances. On superficial examination the gum may appear a little swollen or reddened, and extend a little high up between the teeth, but more often

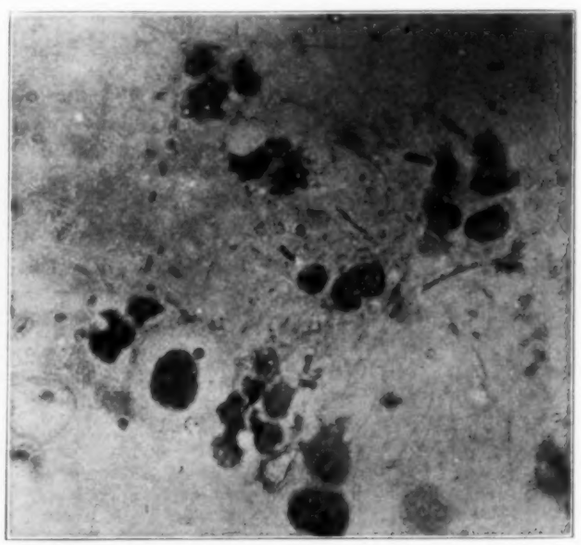

Fig. 3.—Photomicrograph, slide I b, Fig. 1, showing bacteria and a few pus cells.

nothing abnormal is recognized. The patient may have noticed for months or even years that the gums between certain teeth bleed easily from picking, sucking or brushing them, but this came on so insidiously that nothing is thought of it. By examination with a suitable instrument we find the gum loosened from the tooth to a greater or less extent, and a

5. Bass, C. C., and Johns, F. M.: Jour. Exper. Med., 1912, xvi, 567.

certain amount of periosteum is already destroyed. Macroscopic or microscopic pus containing many endamebas can be obtained by scraping out the contents of the pocket. Blood usually flows freely, in contrast to what happens if we do an equal amount of trauma to a normal uninfected gum. This is the early stage. Perhaps the destruction of periosteum has not reached the alveolar level.

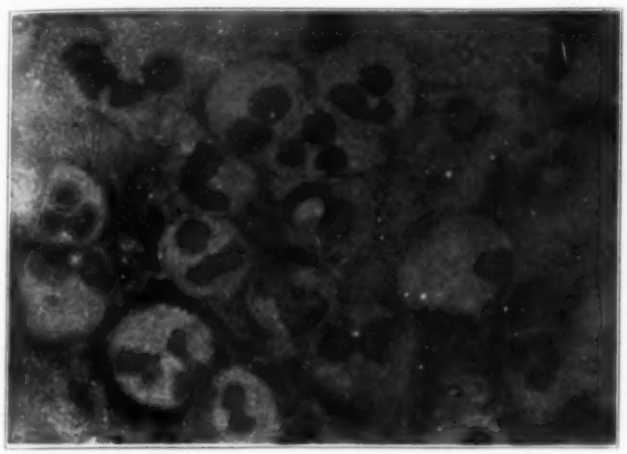

Fig. 4.—Photomicrograph, slide II, Fig. 1, many pus cells, no endamebas. This and Fig. 4 show that the material on the side of the tooth at the indicated places contained comparatively few endamebas.

But the destructive process continues until more and more of the peridental membrane is destroyed, laying bare the root of the tooth and the inside of the bony socket. As the pocket gets deeper and larger there is more and more pus formed. This, no doubt, is very much influenced by decomposition of food that may be forced into it and by the bacterial flora of the mouth. Later the tooth is held only by a small amount of tissue at the bottom of the socket, gets loose, and finally, after years of more or less suppuration, it is lost and the alveolar process, no longer needed to support a tooth, is absorbed. In fact, a great deal of it is removed by the long-continued suppuration to which it has been exposed before the tooth is actually lost. There is more or less soreness, pain, aching and discomfort, and gum boils often form, but the real condition usually is not recognized. The amount of blood lost and of pus produced and swallowed during the several years required for thirty-two teeth lost from this disease to slough or rot out, must be enormous.

We have studied sections and dissections of the diseased tissues in all stages of the disease, and have found the endamebas invariably at the very depth of the lesion. Though some are passing off with the pus, they are many times more numerous in the edge of the living and dying periosteum than in any other place. Figure 1 is a drawing of an old tooth with a pyorrhea pocket on one side, from which we made preparations from different parts and made photomicrographs of representative fields (Figs. 2, 3, 4, 5, 6 and 7). It is seen that though only a few endamebas are present in material from the surface, and consisting chiefly of bacteria, spirochetes and pus, they are present in very large numbers in the edge of the living tissue where Nature is resisting and the destruction is progressing. It should be noticed that this is practically beyond the pus line. What more evidence of pathogenicity do we need?

TREATMENT

Ipecac and its alkaloids, emetin and cephalin, are such perfect endamebacides that nothing better could be hoped for. They have long been employed successfully in the treatment of amebic dysentery, but that disease did not offer such good opportunity to work out dogmatic rules of treatment as the present one does. A given line of treatment can be undertaken, and the effect on the endamebas in the mouth can be watched from day to day or from hour to hour if desired. We have experimented on a large number of patients, watching carefully the effect on the endamebas of different sized doses, different intervals between doses, etc., and feel prepared to lay down fairly definite rules of treatment.

Our experiments with emetin have been limited to its use hypodermatically and later to its use by mouth (internally), with the idea of producing sufficient concentration of it in the body fluids to kill the endamebas in the diseased tissue. We have not tried injecting it into the pockets, or local application, which has been employed with success by Smith and Barrett.[2] We can understand that some particular pocket can be treated locally with as great, or possibly greater, success than by systemic administration of the drug, but if we consider the real condition it would seem that it is not reasonably possible that all the endamebas in all the lesions could be destroyed in this way. When the disease has reached the stage to be recognized by the patient or by the physician or dentist on ordinary examination, it is usually far advanced in one or more places, and there are usually many more lesions or pockets in the earlier stages, all infected with endamebas. We doubt whether one could find all the small lesions in most cases of pyorrhea, much less make local

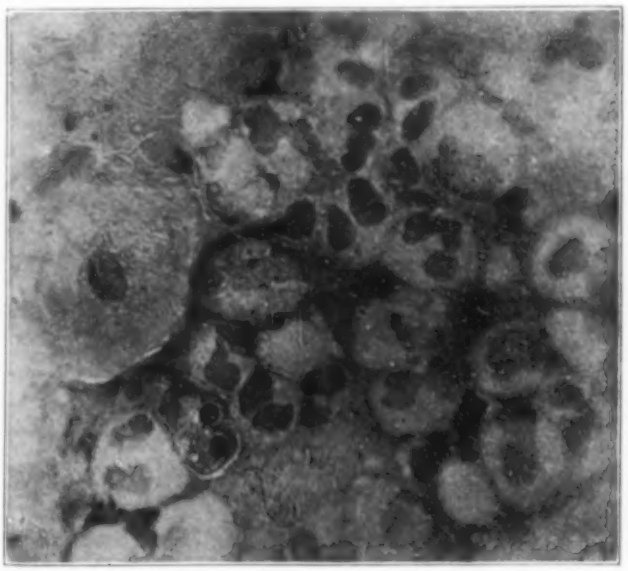

Fig. 5.—Photomicrograph, slide III, Fig. 1. Many pus cells, one endameba.

application to them. Certainly it would require long and patient expert work to destroy all the endamebas in the mouth, and that is the object of specific treatment. It would not profit the patient nearly so much to disinfect or cure his bad lesions and leave many small ones to progress and finally get as bad as those that had been cured. It would, in fact, be necessary to

make applications at frequent intervals until the lesion entirely healed, or else it would be promptly reinfected from the endamebas constantly thrown off from the less extensive lesions. Probably the greatest good to be derived by the patient from the treatment is from saving his teeth that have not lost much of their peridental membrane and supporting alveolar process. The

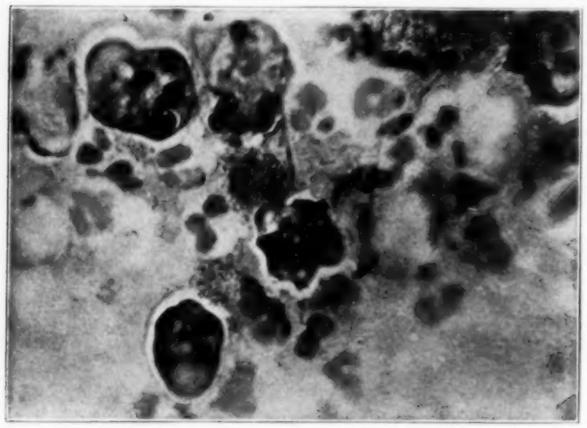

Fig. 6.—Photomicrograph, slide IV, Fig. 1. Material scraped from edge of remaining living peridental membrane—many endamebas, few pus cells.

others may be of limited value after the disease is cured.

Rogers[6] was the first to employ emetin hypodermically as an endamebacide. He found it strongly endamebacidal in dilutions of 1 to 100,000. Therefore there would seem no good reason for employing doses larger than about ½ grain for a normal-sized adult. We have not found that a dose larger than ½ grain up to 3 grains) given hypodermically each day will cause the endamebas to disappear any more rapidly than this amount will do. Less than this amount is sometimes not sufficient. In special instances it may seem desirable to use somewhat larger doses, but for all ordinary cases ½ grain is the proper daily dose.

Endamebas disappear from all lesions following from one to three days of treatment in more than 90 per cent. of all cases. They disappeared in 99 per cent. of our cases following at least six days of treatment. All cases should have at least three days of treatment and none need have more than six. Give ½ grain emetin hydrochlorid hypodermically each day for from three to six days, depending on the case and stage of the disease.

Coincidentally with the disappearance of endamebas the soreness, pain or discomfort and the amount of pus formed rapidly decrease. The tendency to bleed from slight trauma usually ceases within forty-eight hours, and in almost all cases the patient recognizes, and feels confident of, the beneficial effects within a few days. If a physician feels skeptical as to the specific beneficial effect of emetin, he can remove his skepticism by treating and observing a few patients. Both he and the patient are convinced of the efficacy of the treatment within a short time.

After the endamebas have been destroyed by the emetin treatment, however, there are still left the lesions which will require days, weeks or months to heal. Probably no two lesions or pockets in a given case in which many teeth are involved are exactly alike in size, shape, depth, amount of tooth and alveolar process denuded of periosteum, etc. One or more early lesions may be shallow and may have never reached the alveolar level. Others are deeper. One extends all around the tooth, another runs to the end of the root on one side, while the tissue on the other side is all right. In one instance the edge of the alveolar process only is denuded of periosteum; in another the bone and root are uncovered to the bottom of the socket, and in still another there has been considerable destruction of the periosteum covering the outer surface of the alveolar process, giving rise to gum boils, sinuses, etc. In the last stages the tooth is loose in its socket and is held in place perhaps only by a small amount of dead, diseased or dying membrane in the very bottom.

It is an important question in this connection as to whether the periosteum or a substitute tissue can be regrown to fill the space between the root and the alveolar process after it has once been destroyed, even though we stop the destructive process. We have not seen any evidence that this can occur to any considerable extent. If it cannot, then the part of the alveolar process that has been denuded of periosteum will have to be absorbed or removed by Nature (or artificially by proper operative treatment) before complete healing takes place and the gum attaches to the remaining peridental membrane. All the time there must necessarily be some pyorrhea. This will require weeks or months in many instances, and during this time the lesions offer most favorable soil for reinfection with endamebas. On account of the great prevalence of the

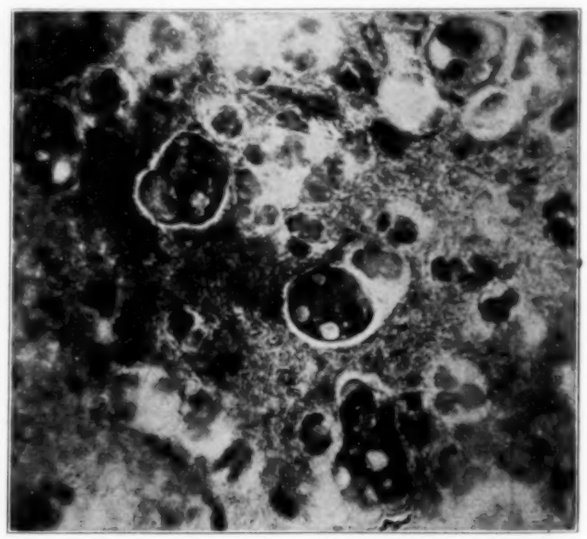

Fig. 7.—Photomicrograph, slide V, Fig. 1. Material from very bottom of lesion showing many endamebas, and bacteria but almost beyond the pus line.

disease, and therefore the many sources of the parasite, such a patient with our present habits could hardly be expected to escape reinfection more than a few days, and certainly not as long a time as would be required for many of the lesions to heal. This would seem to take away the hope of complete cure. Daily hypodermics of emetin cannot be continued indefinitely on account of impracticability and the discomfort they cause, if for no other reason.

6. Rogers: Brit. Med. Jour., June 22 and Aug. 24, 1912; Therap. Gaz., 1912, xxxv, 837.

Reinfection can be avoided, no doubt, to some extent by exercising great care not to put things in the mouth that may have been contaminated by others. Such things as drinking and eating after others should surely be avoided. But greater protection can be secured from ipecac (or emetin if preferred) applied by the patient. Fluid extract of ipecac kills these endamebas when diluted 200,000 times. We first instructed patients to use a drop or two of ipecac on the wet toothbrush as a dentifrice in the usual way at night. Force the solution formed with the saliva between the teeth and spit out the excess. On account of the fact that pure fluid extract of ipecac frequently irritates the mucous membrane, we have lately prescribed the fluid extract diluted ten or more times with alcohol. One drop of this on the wet toothbrush furnishes a much stronger solution than is absolutely necessary to kill all endamebas with which it comes in contact.

Showing that this use of ipecac promises to destroy endamebas that may have been recently planted superficially, and therefore protects considerably against reinfection, we have had patients use it without any other treatment having been given, and in a number of instances endamebas disappeared from shallow lesions, which entirely healed. Of course, it does not affect those in deep lesions, and is not to be recommended for treatment of the disease. In the light of our present information it should be continued indefinitely for prophylaxis, both by those who have the disease, and especially by those who haven't it. Perhaps a still better way to use it would be to put a drop or two of fluid extract of ipecac in half a glass of water and thoroughly rinse the mouth with it each night before retiring.

In spite of prophylaxis, however, relapse or reinfection has occurred in one or more of the lesions in about 12 per cent. of our cases within four weeks of the time when the treatment with emetin was given. We formerly thought that a single dose of emetin should be given about once a week to all patients to kill the parasites in any such instances, but we have later learned that one dose only of emetin seldom destroys endamebas when present. We now feel sure that in cases in which endamebas reappear the full course of emetin should be repeated. Perhaps the best plan for those not prepared to make the necessary microscopic examination to determine whether the endamebas have reappeared, would be to repeat the course of emetin every three or four weeks for at least one or two times in all advanced stage cases. It should be understood that no case should be considered cured, not only until the endamebas have disappeared, but until all the lesions have healed and the pyorrhea has stopped entirely. Those who expect to accomplish this result in a few days will surely be disappointed in most instances.

No doubt proper dental treatment, consisting of cleaning and scaling the roots, removing dead and denuded alveolar process, and cleaning out large pockets will be of value. Frequently irrigating the pockets with a solution of fluidextract of ipecac which need not be stronger than one drop to four ounces would be suitable for this purpose. Most patients soon learn to do this for themselves pretty well if instructed and provided with the ipecac and proper dental syringe (Berlin abscess syringe).

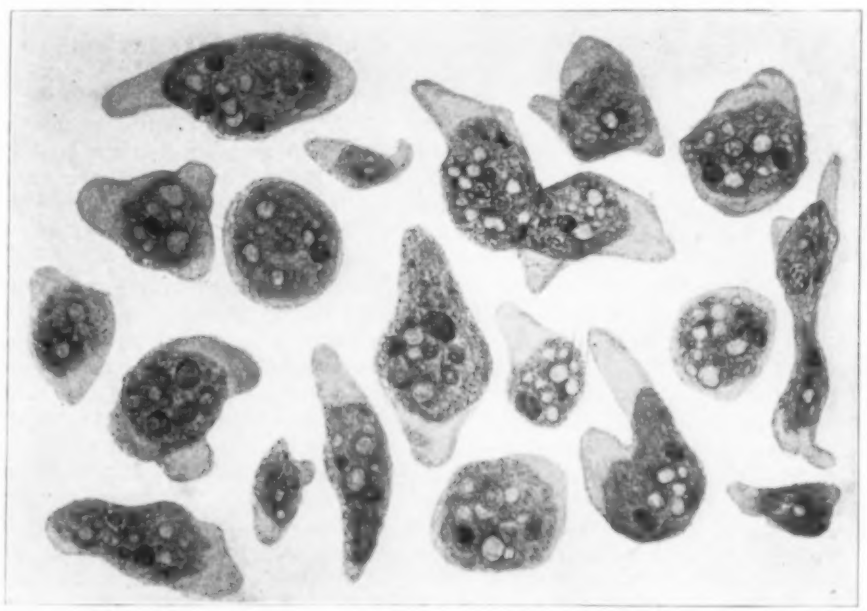

Fig. 8.—Common shapes of Endameba buccalis.

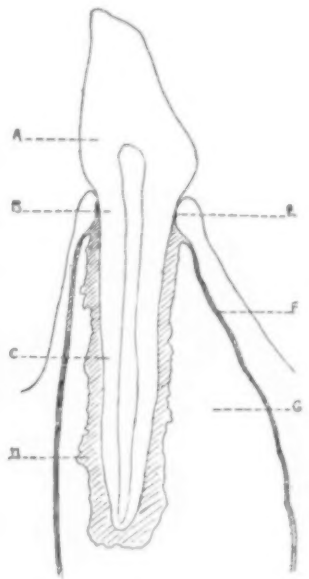

Fig. 9.—Sketch of normal tooth to point out peridental membrane, the seat of the endamebic disease.

We have used emetin made by Burroughs and Wellcome; Mulford; Parke, Davis & Co.; Mallinckrodt, and by Lilly, with apparently equally favorable effect on the disease. The sealed ampules each containing the required dose in solution seem to us to be the most convenient form for ordinary use. In most of our experiments we have been obliged for reasons of economy to prepare our own solutions from the bulk emetin.

During the past two months we have experimented extensively with a preparation of the alkaloids of ipecac that can be taken by mouth without producing nausea, and we are now prepared to announce that, in most instances, at least, it is as efficient in proper doses as emetin given hypodermically. This will make treatment available and practical for a great many more people who have the disease.

The preparation known as Lloyd's reagent, discovered by J. U. Lloyd,[7] has the property of removing all the alkaloids from neutral or acid aqueous solutions of a drug by adsorption. When thus combined with the reagent, which is essentially aluminum silicate,[8] the alkaloid is promptly set free in alkaline solution. It is not liberated in the acid gastric juice, but is set free and absorbed when it reaches the alkaline intestinal juices. The only commercial preparation of the alkaloids of ipecac made in this way that we know of is supplied by Eli Lilly & Co. in the form of tablets, each representing 10 grains of powdered ipecac and called Alcresta ipecac. We have tried one tablet three times a day, two tablets three times a day, and three tablets three times a day. One tablet three times a day does not destroy the endamebas in the mouth in many cases in a week or ten days. Two tablets three times a day destroys all demonstrable endamebas in six days or less in practically all cases. This represents only about ⅔ grain of emetin, and when we consider that it requires considerably larger doses of most alkaloids administered by mouth to produce the same effect as smaller doses administered hypodermically, we could hardly expect smaller doses than this to be successful. Three tablets three times a day destroy all demonstrable endamebas in from four to six days. One patient still had endamebas in one pocket after the fourth day, but this is one instance in which emetin given hypodermically also failed. We have been unable to discover the cause. They disappeared from other lesions and there was apparent improvement in this lesion, but the endamebas persisted in spite of two courses of emetin and one course of the Alcresta ipecac tablets.

This form of ipecac does not cause nausea, but there is frequently more or less abdominal discomfort produced by it and also some looseness of the bowels. These symptoms have not been sufficient in any of our cases to make the treatment impractical. We should expect, however, to find an individual occasionally who could not take it satisfactorily, and also those who would not absorb enough of the drug to destroy their endamebas on account of the diarrhea produced, carrying it through the intestinal canal too rapidly.

SUMMARY

1. Pyorrhea dentalis and alveolaris is practically a universal disease, which leads to the loss of the teeth by a long suppurating process. All people have it sooner or later. It begins in early adult life or earlier.

2. The specific cause of the disease is *Endameba buccalis* and possibly other species, which infect and destroy the peridental membrane. The pyorrhea results largely from the secondary infection.

3. The demonstrable endamebas can be destroyed by giving ½ grain of emetin hydrochlorid hypodermically for three to six successive days.

4. Apparently equal endamebacidal effect is produced by two or three Alcresta ipecac tablets (Lilly) taken by mouth three times a day for four to six successive days.

5. The lesions require variable lengths of time to heal, but many could not reasonably be expected to heal in less than several weeks or months.

6. The treatment must be repeated from time to time until the lesions all heal, on account of relapse, or probably reinfection of the lesions as a result of the great prevalence of the infection.

7. Injecting ipecac or emetin into the worst lesions ought to be of service and can be carried out by patients in many instances.

8. Rinsing the mouth thoroughly with a solution of fluidextract of ipecac is believed to protect, to some extent, against reinfection, and actually cures the disease in its earliest stage in some instances.

7. Lloyd, J. U.: Chem. Abstract, 1913, vii, 683.
8. McGuigan, Hugh: A Colloidal Compound of Strychnin and Its Pharmacology, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1933.

THE USE OF SKIN GRAFTS IN THE AMBULATORY TREATMENT OF ULCERS

REPORT OF FIFTY CASES *

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INTRODUCTION

In the outpatient department of every large surgical clinic there are a great number of patients with ulcers of varying etiology, many of them of long standing. The treatment of these ulcers is usually carried out in a routine manner with the idea of getting through with the dressings as quickly as possible. What has been the result? Some of the patients have been cured; some have continued at the same clinic for many years, being satisfied with the temporary comfort of the dressings; others have drifted to neighboring clinics, with no better results, and finally return, only to repeat the round; while still others give up in disgust and treat themselves at home, only returning to the dispensary during acute exacerbations.

Taking into consideration the unsatisfactory results ordinarily obtained in the treatment of these patients, the economic waste to the hospital in the time taken to do the dressings and the materials used is enormous. The wage earning capacity of the patient is nearly always considerably lowered, and in some instances their work has to be discontinued. Serious consideration has often been given to the matter, as either condition is of utmost importance to these poor people. It seemed to me that the results might be improved, and the restoration of the full earning capacity hastened if each wound could be studied separately and treated by what we may call "intensive methods."

About fourteen months ago a trial was made of this idea in the Johns Hopkins Dispensary, and I was given the opportunity to study and treat a large number of these wounds. Many old and well-proved methods were used, as well as a number of new, and some hitherto untried, methods. Such favorable results were obtained that special rooms were set aside for this work and every facility given. Among a number of methods for accelerating the healing of ulcers the *transplantation of skin* was tried on a series of cases.

It has always been taught that the first essential for success in skin transplantation was absolute rest with immobilization of the part grafted. I fully agree with this principle as the ideal procedure, and believe that it should always be carried out when possible. The use of skin grafts as ordinarily done in hospitals on

* Read before the Southern Surgical and Gynecological Association, Dec. 17, 1914.
* From the Surgical Out-Patient Department of the Johns Hopkins Hospital.

clean wounds, with patients in bed and having the maximum of good food, good nursing, cleanliness, fresh air, and above all, complete rest, is comparatively simple to the experienced surgeon. On the other hand, take the patients who come to the outpatient department. They are usually poorly nourished; the houses in which they live are often overcrowded and unsanitary. They are, as a rule, unable to stop their work, except for the time taken off for dressings. Many of them should be in the hospital, but there is little chance for even the few who desire admission to secure beds, as there are very few beds available for chronic ulcers. In short, rest, the factor of greatest importance in the treatment of these cases, which is emphasized by every writer on the subject, has to be entirely eliminated. With all these unfavorable conditions in mind, I began gradually to prepare certain wounds with the idea of grafting. Fortunately the first case grafted, that of a long-standing varicose ulcer, was, to my surprise, a complete success, and that success stimulated further trials.

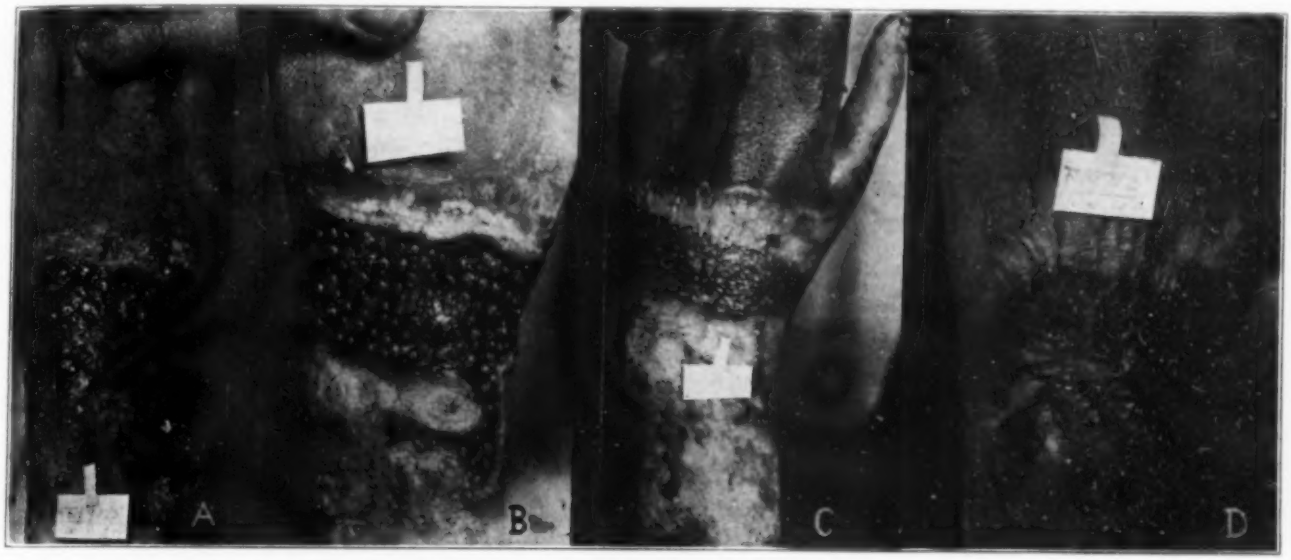

Fig. 1.—Girl, aged 14; ulcer following burn; duration, six weeks: *A*, before grafting; *B*, two days after grafting with small deep grafts; *C*, twenty-six days after grafting; *D*, eight months after grafting. This patient has a perfect functional result.

All of the grafts were placed on undisturbed granulations. I will not discuss at this time the methods used to bring the granulating wounds into a healthy condition; suffice it to say, that many operative methods and local applications were used to accomplish this purpose. The technic of cutting, applying and dressing the grafts was that ordinarily used.[1]

Fig. 2.—Man, aged 22; ulcer following gunshot wound; duration, four weeks; *A*, before grafting; *B*, twelve days after grafting with small deep grafts; *C*, one year after grafting. The skin is freely movable over the grafted area, and the result is excellent.

It is obvious that when the grafts are in place they must be secured so that no sliding motion is possible. This is easily done by either placing overlapping strips of rubber protective, or a sheet of paraffined mesh over the grafts and then securing this and the overlying gauze dressing with numerous strips of adhesive plaster. Over this again is placed more gauze and a snug gauze bandage, and finally a muslin or crinolin bandage. Sometimes thin strips of splint wood were incorporated in the dressings. Each patient considered in this series has continued his or her daily occupation.

This report will analyze the results obtained in the first fifty cases in which grafts were used. For convenience the cases may be divided as follows:

SUMMARY OF CASES[2]

1. Ulcers Following Burns; 8 cases: Male, 4; females, 4. White, 3; colored, 5. Ages, 11 to 50 years. Duration, three weeks to twenty-two months. Situation, leg, 6; cheek and wrist, 1 each. Size, largest, 16x6 cm.; smallest, 2x3 cm. Treatment, small deep grafts were used on 7; and whole thickness on 1. Result, well, 7; improved, 1.

2. Ulcers of Leg; 9 cases: Males, 3; females, 6. White, 8; colored, 1. Ages, 39 to 61 years. Etiology. Six were varicose ulcers with markedly enlarged veins. Three were luetic ulcers with enlarged veins in one. Duration, three weeks to twenty years, continuously; off and on, three years to twenty-five years. Situation, middle third, 2; lower third, 7; right leg, 2; left leg, 6; both legs, 1. Size, largest, 8x17 cm.;

1. Davis, J. S.: Skin Transplantation, with a Review of 550 Cases at the Johns Hopkins Hospital, Johns Hopkins Hosp. Rep., 1910, xv, 307; Use of Small Deep Skin Grafts, THE JOURNAL A. M. A., Sept. 19, 1914, p. 985.

2. Some of the lesions referred to in this report are, according to definition, granulating wounds. To my mind there is a distinction without a difference between a sluggish granulating wound and an ulcer covered with granulations, whatever the etiology may have been.

smallest, 2.5x1.5 cm. Treatment, small deep grafts were used on all. Results, well, 6; improved, 2; unimproved, 1.

3. Ulcers, Postoperative; 17 cases: Males, 12; females, 5. White, 16; colored, 1. Ages, 12 to 84 years. Etiology: The ulcers followed amputations, operations for ingrown toe-nail, epitheliomas and infections. Duration, four days to three months. Situation, finger, cheek, forehead and forearm, 2 each; leg, breast and scalp, 1 each; toe, 6. Size, largest, 19x5.5 cm.; smallest, 3.5x2 cm. Treatment, small deep grafts were used on 16; Thiersch grafts on 1. Result, well, 14; improved, 3.

Fig. 3.—Man, aged 50; ulcer following burn; duration, twenty-two months: *A*, before grafting; *B*, one and one-half months after grafting with small deep grafts. Note the solid healing in the midst of scar tissue.

4. Ulcers, Traumatic; 9 Cases: Males, 7; females, 2. White, 7; colored, 2. Ages, 11 to 63 years. Etiology: Injuries of various kinds. Duration, two weeks to ten months. Situation, finger, 3; leg and ankle, 2 each; foot and wrist, 1 each. Size, largest, 8x6.5 cm.; smallest, 1.5x1.5 cm. Treatment, small deep grafts were used on all. Result, well, 7; improved, 1; unimproved, 1.

5. Ulcers, Miscellaneous; 7 Cases: Males, 5; females, 2. White, 5; colored, 2. Ages, 13 to 80 years. Etiology, following infection and frost bite, 2 each; trophic, ice bag necrosis, and tuberculosis of chest wall, 1 each. Duration, two months to eight years. Situation, foot, 4; leg, abdomen and chest wall, 1 each. Size, largest, 7x5 cm.; smallest, 2x2 cm. Treatment: Small deep grafts were used on all. Result, well, 2; improved, 2; unimproved, 3.

General Summary: Males, 31, females, 19. White, 39; colored, 11. Ages, 11 to 84 years. Duration, few days to twenty-five years. Size, largest, 8x17 cm.; smallest, 1.5x1.5 cm. Treatment: Small deep grafts were used on 48; Thiersch grafts on 1; whole thickness grafts on 1. Result, well, 36; improved, 9; unimproved, 5. Of those wounds which were improved by grafting but not completely healed, 5 were situated on the foot and 4 on the leg. Of those which were unimproved, 2 were on the leg, 2 on the foot and 1 was on the chest wall.

REMARKS

All of the grafts were autografts. Small deep grafts were used on most of the wounds, as the operative procedure is simple, and furthermore, no other type of graft could have been successful on many of the wounds grafted.

In some instances, in which the grafts were placed close together, the ulcers were covered with epithelium within a week. When a partial grafting was done, or when only a portion of the grafts were successful, a second grafting was required to fill the areas not covered.

Several graftings were done in all instances of failure, without result. It is interesting that several of these wounds were subsequently grafted in the hospital, without success, so that the failure seemed to be due to the wound itself, rather than to the fact that the patient was not kept at rest.

I feel confident that the percentage of takes would have been considerably larger had the cases been selected as to situation, cause, etc., but in order to test the procedure, ulcers in many situations, and of varying etiology were grafted. As might be expected, the ulcers on the feet and legs were more difficult to heal than those in other situations, and the failures were almost entirely confined to those regions.

I have been able to observe some of these patients for over a year after grafting, and there has been no recurrence in a single instance in an area successfully grafted. In one or two cases with marked varicose veins, small ulcers on other portions of the leg have occurred, but not in the grafted area.

CONCLUSIONS

From the results obtained in the first fifty cases in which grafts were used in the ambulatory treatment of ulcers, I feel that we have added to our armamentarium a method of treatment which has hitherto been used only on patients resident in the hospital. In other words, the successful use of grafts in the out-patient department will make for hospital economy, and will also hasten the return of many patients to full wage earning capacity.

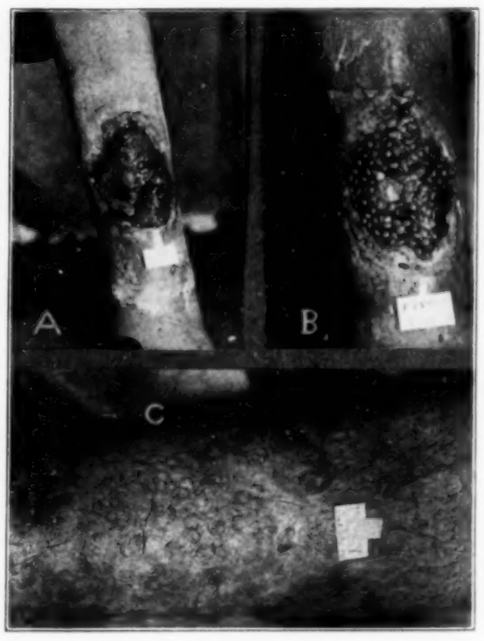

Fig. 4.—Woman, aged 46; ulcer of leg, varicose; duration, twelve years, continuously: *A*, before grafting; *B*, one week after grafting with small deep grafts; *C*, five months after grafting; examination of this patient eleven months after grafting showed no tendency to recurrence. The healing was stable and the individual grafts are still plainly visible.

VERTIGO

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In this preliminary paper we shall endeavor (1) to outline, necessarily very briefly, a conception of vertigo which appears to us to be based on anatomic and physiologic data, and (2) to point out how this conception aids in the diagnosis and treatment of cases of vertigo. No attempt will be made to enumerate the diseases in which vertigo is a more or less conspicuous symptom, for it appears to us that with a clear conception of what vertigo is there will be less necessity for any such elaborate and detached enumeration. It is unnecessary to apologize for discussing this subject, for the significance of vertiginous attacks offers difficulties both to the general practitioner and to the specialist in different branches of medicine.

Vertigo, when considered from the point of view of etiology, has been and still is a subject of great complexity. Its frequency in so many diverse diseases offers a fruitful field for speculation. The importance of its interpretation from the point of view of diagnosis need not be insisted on. We all know that it is most elusive in response to treatment. One difficulty in regard to its interpretation lies in the fact that most of us have no clear conception of what vertigo is. Subjectively, we all have had experience with it. But few would be prepared offhand or even after considerable thought to define it in terms conveying any conception of its anatomic or physiologic significance. Yet without such a clear conception its diagnostic significance must be largely lost and its treatment must be haphazard.

The term "vertigo" is commonly applied to a sensation of rotation of surrounding objects or of one's self. While true that rotation is a conception of vertigo in its most pronounced form, still there are other forms in which the sensation is not that of rotation, but of a feeling of instability either of one's self or of surrounding objects. There may be the feeling, not that either we or the objects around are rotating, but that we are falling or swaying, or that the objects around us are sinking or rising.

Not all its modes of manifestation, however, can be expressed clinically in terms of instability. We are here dealing with a subjective phenomenon, and every one recognizes how difficult it is to get accurate data on subjective sensations. We all know how the same feeling may be expressed by different persons in different ways, apart from the fact that the sensation may be more marked in one than in another. Investigation has shown that from the clinical point of view we must include under the term "vertigo" sensations of many kinds: a blurring vision, a feeling of discomfort or of anxiety, fulness in the head, as after smoking; a feeling of weakness, a disturbance of consciousness; in short, a variety of sensations which, if they persist, tend sooner or later to become more pronounced as disturbances of equilibrium.

While vertigo may be traceable most frequently to some pathologic condition disturbing, either directly or indirectly, the mechanism concerned with equilibrium, there are occasions when obviously no such pathologic condition exists. For instance, it may be traceable to the possibility that the surrounding circumstances are such that should a disturbance of equilibrium result, a fall of some considerable magnitude might follow; or there may be simply the fear that, given certain eventualities, a fall would occur: for instance, looking over a bridge into a ravine, or standing on the parapet of a tower with thick mists obscuring the view. That we know the sensation to be irrational does not seem to have much weight.

When vertigo has once arisen under certain conditions, as of fear arising on our being in a dangerous position, it may easily be aroused again under conditions similar in kind though less rational in reality — probably dependent on the fact that anatomic paths once traveled are more easily traveled again.

In the monograph "Der Schwindel," Ewald defines vertigo as a depression of our static consciousness, and Wollenberg as a perplexity in regard to our condition in space, both of which definitions, as Ewald says, amount to the same in the end. We venture to suggest that such statements are so obscurely based on anatomic or physiologic data that they do not help toward a clear, satisfactory definition.

All are agreed that vertigo is related in some way to disturbances of equilibrium. In order to get a clear conception of what vertigo is, and where the disturbance which causes it may arise, it is necessary to have a conception of the paths along which impulses which maintain equilibrium may pass. To preserve equilibrium impulses are constantly coming to the brain from four chief peripheral sources: (1) the ear, (2) the eye, (3) impulses from muscles, tendons and joints, and (4) impulses from the skin, touch and pressure. These impulses and probably others as well, for example, tactile hairs,[1] result in muscle coordination whose most important function is to preserve equilibrium.

We are all agreed that vertigo bears some relationship to a disturbance of equilibrium. But extensive nerve lesions as in ataxia can make difficult or impossible standing or walking without the help of the eyes, without, however, causing vertigo. The tabetic with his eyes shut has instability. He then may have the sensation of vertigo, but he does not fall because he has vertigo. He falls because he experiences a sudden unexpected loss of afferent impulses from the eyes on which he has been depending to reinforce the other impulses which, unaided, are insufficient to maintain his equilibrium. He has vertigo because the sudden closing of the eyes has intensified the mental confusion resulting from the inadequacy of the impulses from the muscle, tendon, joint and skin, which inadequacy has been compensated for by the visual impulses. In the tabetic the muscular incoordination which is the primary factor may appear without vertigo. In the labyrinthine irritation, the instability is the outward manifestation of the vertigo, which vertigo is, or has been, present and may precede the instability.

Vertigo arises from a confusion or dissociation of the impulses on which the subject bases his conception of his position in space. By far the most important of these impulses concerned with the conception of the position in space, or change of position in space, arise from sense organs in the head segment, the otic labyrinth and the muscular and retinal portions of the

1. Vincent, S. B.: Jour. Comp. Neurol., 1913, xxiii, 25.

eyes. In the tabetic, the mechanism of the head segment is not primarily disturbed, but the proprioceptive (muscle, tendon, joint) and the skin sensations are disturbed.

Ataxia may lead to disturbance of equilibrium, but we may have ataxia without vertigo, or vertigo without ataxia. Both ataxia of a certain sort and vertigo are due to disturbances of afferent impulses concerned with equilibrium, but the ataxia is due to a loss in a group of afferent impulses, while vertigo is due to a disturbance of the normal association of certain groups of afferent impulses, especially those from the head segment. An animal after double labyrinthine removal may have its objective signs of vertigo reduced by throwing out other afferent impulses and so reducing the factors which cause the disharmony. Although for purposes of brevity, we are retaining the term "ataxia" in the present discussion because of its universal use, we wish to point out here that it is a very inexact term at present and should be more clearly defined.

It will, then, be noted that what we insist on is that it is not instability alone which constitutes vertigo on its subjective side; it is the rising into consciousness of the sensation of instability; it sometimes is the fear that such an instability may occur, or a fall be possible. There may be no outward objective symptom of vertigo; or there may be incoordination, and the consequent muscular endeavor to maintain equilibrium.

Normally, the afferent impulses which maintain equilibrium are harmonized subconsciously, and it is only when disorganized that they ordinarily attract our attention. The explanation of this is obvious. They are so essential to man's existence and so constant in their activities that Nature has arranged that they work subconsciously; otherwise their insistence on recognition and conscious adjustment would be a serious detriment to man's mental development. But, as in many other subconscious activities, consciousness may enter in either as a controlling or disturbing element, for example, through memory and emotions. Such a disturbing influence from a higher mechanism may cause disharmony, and so there arises psychic vertigo.

In the cerebrum these constant afferent impulses are, under ordinary conditions, associated, or to use a better term, harmonized or integrated, to preserve the equilibrium. If for any reason they become dissociated or disharmonized or disintegrated, the conscious confusion that results is vertigo. The motor incoordination which forms the objective symptoms of vertigo is a result of this dissociation.

Vertigo for the present may be considered as the confusion resulting from the coming into consciousness of afferent impulses concerned with equilibrium which ordinarily are associated (integrated), but now for some reason have become dissociated. Of the impulses coming in from the peripheral organs mentioned, the most important is the ear, and any slight disturbance of the labyrinth will produce severe vertigo. On the other hand, a gross lesion of the third and fourth groups mentioned above may exist without vertigo. Disturbances of the eye are midway between the two; and probably lesions here are largely influenced by the close association of eye movements with the labyrinth. We should elaborate this point, as it is fundamental to a conception of our views. The physiologic action of the labyrinth is primarily to preserve the knowledge of the position of the head in space and reflexly to maintain equilibrium. To do this the labyrinth is closely related to the musculature of the body, especially the muscles of the head, and the relationship is more clearly discernible in its action on the freely movable muscles of the eyes. An observable outcome of this relationship is that, no matter how the head is turned, the eyes involuntarily are readjusted. Otherwise, the outside world would move with each movement of the head and endless confusion result. Mechanical irritation of the labyrinth with the head at rest, for instance, with hot water, results in a message from a receptor which, normally interpreted, indicates that the body is rotating and calls for certain movements of readjustment. But in this instance the inflowing messages from Groups 2, 3 and 4 are uninfluenced by this irritation and contradict the messages sent in from the labyrinth and resist the demand for readjustment. So there results a confusion in the integrating mechanism arising from this dissociation of peripheral messages; impulses which normally work together are no longer in harmony; and the person, becoming conscious of the disharmony, experiences the sensation which we call vertigo.

Up to a certain point rotation may be carried on, as in a swing, and compensatory movements occur by which means the subconscious impulses are able to adapt themselves to these impulses and no vertigo results. But let the rotation be so great that the impulses from the last three groups no longer fall into line with those arising from rotation, and the controlling power of the cerebrum no longer suffices—then vertigo results. Practice and age are in this an important factor.

Visual vertigo does not so often come under the observation of the clinician as labyrinthine. It can often be produced if we look at a large mirror which is moving without our knowledge. Double vision or errors of refraction cause vertigo because they give false impressions of position in space. The eye muscles, partly because of their close relationship to the labyrinth, play a greater part in vertigo than the other muscles of the body.[2] Their incoordination arising from any cause or the nystagmus which arises when the labyrinth is stimulated is a manifestation of this.

Not only does vertigo arise from disturbance of the peripheral sense organs, but lesions involving their central paths will also produce it. So disturbance of the complex vestibular path, or of the great coordinating mechanism for the unconscious sensations from the muscles—the cerebellum—will give vertigo. One thing that has been impressed on us by experiment is the importance of pressure on the eighth nerve or in the posterior fossa as a cause of vertigo. Clinicians have paid too little attention to the effect of pressure, which need not be very great to produce signs of vertigo.

So far as the areas in which this integration takes place are cerebral, cerebral lesions will cause vertigo, and there is sufficient evidence to show that vertigo does arise from lesions of the cortical mechanisms. So a tumor of the cerebrum may set up an excitation giving a sensation of position in space at variance with impulses from the eye or ear, and vertigo results.

Again, it may occur in a hyperexcitability of the nervous system. So in neurasthenia, in which we have

2. Wilson and Pike: Proc. Soc. for Exper. Biol. and Med., 1913, x, 81.

probably a decreased neural resistance in certain paths and systems due to disturbed metabolic processes, we may have vertigo. Here it may follow that the impulses, say from the two eyes or from the two ears, vary in intensity, and vertigo results. Ordinarily, these slight differences in the intensity of the impulses from the two sides may not rise above the threshold value of the reflex arc, and no symptoms follow.

We may therefore have vertigo due to: (1) organic lesions, or (2) functional disturbance.

Now as the diagnosis of a functional disturbance implies the consideration and elimination of organic lesions, in all cases of vertigo we have to examine at least the four sources mentioned above. And as of these the labyrinth is the most important, the condition of the ear must always be considered. Very slight irritation of the sensitive labyrinth will produce vertigo and muscular incoordination. Even when the muscular phenomena are manifest in the eyes alone more or less vertigo is present. It must be noted that in slight cases we can inhibit the vertigo just as we can inhibit a labyrinthine nystagmus. In such cases the dissociation of afferent impulses is reassociated through conscious processes, and the objective as well as subjective phenomena are controlled. The instability is the outward manifestation of the vertigo or rather of the subconscious state from which the vertigo arises. But the otologic aspect of the problem is not confined to the internal ear. It extends to the vestibular nerve and its central connections, some of which are known, but the greater part are still in doubt.

As equilibrium is a function of the labyrinth, so vertigo is one of the most important symptoms of its disease. We may distinguish: (*a*) direct vertigo, due to lesion of the vestibular apparatus, and (*b*) indirect vertigo — disturbance of the vestibular tract, for instance, from gastro-intestinal disturbance.

In both of these, the sickness and vomiting may be due to the spread of vestibular irritation to a neighboring mechanism or, in the indirect vertigo, from the stomach itself. It is not the intention at this time to elaborate these points, but rather to indicate how the otologist attacks the problem. This we can best do by outlining briefly a few of the cases that have come under observation—our remarks being directed toward methods of diagnosis and of treatment.

CASE I.—*History.*—W. G. K., man, first seen December, 1912, complains of repeated attacks of vertigo with nausea and vomiting during the last four years. These are increasing in severity and frequency so that now he is frequently incapacitated for work. There is a constant feeling of uneasiness. He is very subject to "colds in the head," and when these occur an attack often comes on. He has had a course of bromids for over a year. There is no history of syphilis.

When first examined he had occasional subjective sensations of movement of rotation, but no nystagmus was observed. During a severe attack objects go to right; the patient feels himself going to right but falls to left. If he lies on right side vertigo is diminished. Observation during attacks showed: (1) nystagmus, slow to left; (2) turning eyes or head to left, vertigo less; to right, vertigo increased; (3) skin cold.

Examination during interval when no pronounced vertigo, showed: Romberg to left, no nystagmus; hearing, right, normal; left, markedly diminished, diminution of tones at both ends of scale but especially for lower tones. Rinné, negative; Weber, to right; bone conduction diminished. Both tympanic membranes slightly thickened and retracted; left slightly congested. Nasopharynx, markedly congested; numerous swollen follicles; synechiae in recessus pharyngeus (Rosenmuelleri). Left eustachian tube swollen and opened with difficulty; right normal.

Diagnosis, Treatment and Results.—Nasopharyngitis; tubal congestion on left side; left labyrinth affected. Nasopharynx and tube treated, synechiae broken down, follicles destroyed and zinc chlorid (from 2 to 5 per cent.) applied. Catheterization. Sodium bromid, 7½ grains, twice a day. The treatment calls for no particular remarks. The sodium bromid was stopped after a fortnight. The nasopharynx rapidly improved and the tube became less congested. With this improvement the vertigo disappeared and the hearing improved.

Present Condition, June, 1914: The patient has received no treatment for several months. Hearing is improved in left ear. Both tubes are equally patent. There have been no attacks of vertigo; once or twice when patient had cold in the head there was a feeling that it might come on.

The symptoms in this case point to a combination of internal and middle ear deafness. We believe that there is here a hypersensitive labyrinth probably due to vascular changes similar to those found in the nasopharynx and middle ear. Increase of extra labyrinthine pressure on a susceptible labyrinthine mechanism may produce vertigo. Slight increase of pressure may not do so; the pressure must bear a definite relation to the threshold value for stimulation of the vestibular nerve.

The following points are worthy of emphasis:

1. Patient falls to the left: In labyrinthine disease the patient falls to the side of the lesion. Bárány has stated certain laws in regard to the relation of the quick phase to falling. But as we have pointed out elsewhere,[2] this general rule holds: falling occurs in direction of slow phase of nystagmus.

2. Apparent movement of self to right: Nystagmus during attack slow to left. This is in agreement with the rotation law that apparent rotation of one's self is always in direction of rapid phase of nystagmus.[3] As a corollary, if patient's history show the subjective feeling of movement of self to right and on examination no nystagmus be present, we can assume that the nystagmus would correspond to this law, that is, be slow to left. This is an indication of the ear affected — subjective rotation to right — ear affected left. One may here note how difficult it is to get a distinct history of subjective sensations even from intelligent patients, and further, how much less reliable are the subjective sensations of apparent movement of external objects.

3. Sensations of apparent movement or rotation can persist after or without nystagmus.

4. Turning eyes to left, direction of slow phase of nystagmus, vertigo less: Quick phase of nystagmus alone can be inhibited and inhibition of quick phase inhibits rotatory sensations of self, of external objects and diminishes vertigo.[4]

5. In disease of the labyrinth the patient lies on the sound side: turning to the diseased side makes the vertigo worse.

The importance of pressure or variations of pressure on the labyrinth or on the vestibular nerve from whatever source as a cause of vertigo is not fully appreciated even though not uncommon, for example, after catheterization or Politzerization. We find that Högyes[5] more than a quarter of a century ago pointed

3. Bárány, quoted by Holt: Ocular Nystagmus and the Localization of Sensory Data During Dizziness, Psychol. Rev., 1909, xvi, 391.
4. Bárány: Monatsschr. f. Ohrenh., 1906, xl, 193.
5. Högyes: Arch. f. d. ges. Physiol., 1881, xxvi, 558.

out the association and explanation of vertigo from pressure in the ear, and we find that such an aurist as Politzer[6] and such a neurologist as Babinski[7] have noticed the effect of such pressure and the relief following its removal. More recently Bárány[8] has pointed out the possibility of its occurrence. The reason of this non-appreciation of the importance of pressure is not far to seek. The modern aurist still clings to the idea that the stimulation of the nerve endings in the semicircular canals is due to endolymphatic currents, even though Mach and Crum Brown long ago pointed out that such currents were inconceivable in such minute canals.

Case 2.—*History.*—Man, aged 55, admitted to Wesley Hospital, November, 1912, complaining of vertigo. The first attack was three years ago, at which time he was dizzy and felt faint. He was then treated for left ear deafness by middle ear inflation with eustachian catheter and air pressure. After two weeks of treatment the vertigo left. He was free of discomfort for seven or eight months; then came a second attack which was less severe. About one year ago he had a third attack, less severe than the second. He was first seen by one of us in the present fourth attack, which came on about four weeks ago. He ascribes this attack to excessive fatigue. In the evening while in his office he was suddenly seized with dizziness; the room appeared to rotate and he was compelled to lie down. The severe vertigo lasted about three minutes, during which time he felt as if he were being turned round and round, but the direction of apparent rotation could not be accurately ascertained. This was the first time he had had a distinct sensation of rotation.

Since then he has been more or less dizzy all the time with occasional violent attacks during which a distinct sensation of apparent rotation of self and external objects is present and tinnitus may be increased. Vertigo is so constant and so subject to increase that he has had to abandon his practice. The symptoms are more marked in the evening. At night in the dark he often walks with a staggering gait. When lying down with his head braced he is relieved to some extent, but movement seems to increase his trouble. Reading or writing aggravates the attacks. When the dizziness is severe he feels unable to locate the position of the head, for instance, the angle at which it is; this he describes as inability with eyes shut to locate the head in space.

Present Condition.—Right ear normal for low voice and whisper; watch heard at arm's length; Rinné positive; high tones normal; membrana tympani normal; tube patent. Left ear: hearing deficient, traced to an explosion ten years ago; watch heard at 1½ inches; Rinné positive; high tones deficient; bone conduction diminished; membrana tympani normal; tube normally patent. Romberg to left; no nystagmus; no increase in blood-pressure; eyes and other organs normal.

Comment.—The symptom of more or less constant vertigo is frequently associated with irritation of some part of the vestibular tract. In this case we believe that the vertiginous state from its association with auditory impairment was due to varying pressure on the left vestibular division of the eighth nerve or its terminations probably from disturbances of circulation. In such conditions good results are obtained from pilocarpin followed, if necessary, by iodids. The tendency recently has been to decry the value of pilocarpin, but there are many competent observers who have found it very serviceable. It is not our intention here to discuss its action, but among recent publications reference may be made to the work of Dixon and Halliburton.[9]

Treatment and Results.—Pilocarpin 1/20 increasing to 1/6 grain to obtain the physiologic action of the drug. The results were satisfactory. The violent attacks completely disappeared and the patient went home very much improved and was soon able to resume his work. One of us has kept in touch with this patient since, although he lives at some distance. The reports have been satisfactory until this recent communication:

July 7, 1914: "For the last six weeks the vertigo has returned in a mild form, appearing before dinner or just after and lasting until retiring. The postnasal catarrhal symptoms, manifested mostly by hawking and spitting with which I have been troubled almost all my life, do not appear any worse than usual. I do not believe the catarrh has anything to do with the symptoms of vertigo. The ear inflation you remember, before I came to you, made the vertigo worse, but the first and second attacks, years ago, seemed to be relieved by the middle ear inflation treatment. My general health for summer is as usual. I have thought of calling on you again should the vertigo continue, but as I have said, it is mild."

It would be easy to multiply such cases. The following case exemplifies another variety:

Case 3.—*History.*—H. W., man, aged 35, admitted to Wesley Hospital, Nov. 24, 1913, complained of vertigo and headache, which he has had for three months. The headaches are chiefly frontal. The vertigo is so severe that he is compelled to sit or lie down and hold on. An attack comes on at least once a day, lasts for an hour and is accompanied by nausea and vomiting. During the attack objects apparently go round in a circle (to right?). Up to ten days ago he had difficulty in swallowing and liquid food frequently returned through the nose.

Patient had syphilis three years ago; he has had mercurial treatment for six months, and recently one injection of salvarsan.

Present Condition.—The patient's walk is unsteady, but there is no marked ataxia. Romberg is questionable though with eyes shut he sways considerably. During an attack with his eyes shut he falls to the right and slightly back. There is a spontaneous nystagmus on looking to the left. With eyes shut and with palm down his right hand pointed to the right. He touches point of nose and other parts of body with fair accuracy. Slight paralysis of right facial and of right side of soft palate. Taste impaired. Left vocal cord paralyzed. Tongue deviates to left. Pupils react to light and accommodation. Hearing good in both ears and range unimpaired as tested by forks.

Nystagmus: Cold water in right ear for twenty seconds gave marked nystagmus slow to right, lasting three minutes. Vertigo is so marked that with eyes shut the patient feels himself falling and holds on to chair.

Cold water in left ear for forty seconds gave slight nystagmus lasting one minute. After the cold water in left ear he pointed accurately with his right hand, to the left with his left hand.

Both in blood and cerebrospinal fluid, Wassermann was strongly positive.

Diagnosis and Treatment.—Basilar syphilis involving the right seventh and right vestibular and right tenth nerves, and left tenth and twelfth nerves. Mercurial injections and inunctions were given.

The vertigo disappeared and the patient left the hospital December 9, improved.

6. Politzer: Diseases of Ear, New York, 1909, p. 735.
7. Babinski: Ann. de mal. de l'orielle, 1904.
8. Bárány: Lewandowsky's Handbuch der Neurologie, 1910, p. 935; Tr. Internat. Cong. of Med., Otol. Section, 1913, p. 571.
9. Dixon and Halliburton: Jour. Physiol., 1914, xlviii, 128.

The Physician as a Sanitary Policeman.—The present day physician wants to know not only what is ailing his patient, but also how his patient acquired the disease, whether any other persons are exposed to contagion from the same source, whether the patient himself is a danger to his friends and relatives, and whether the disease will spread throughout the entire community or can be confined to the single case in hand. He owes a responsibility not only to his patient but to the community. He is not only the caretaker and medical adviser of the sick. He is also the guardian and protector of the well. Each practicing physician is or should be a sanitary policeman for the protection of the community against contagion.—Frederick R. Green, *Northwest Medicine.*

THE CHEMICAL EXAMINATION OF DUODENAL CONTENTS AS A MEANS OF DIAGNOSIS IN CONDITIONS OF JAUNDICE *

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It is now almost four years since I first began to study the contents of the duodenum as a means of diagnosis in various conditions of pathologic interest. During this time, over 120 analyses have been made; included in this series is a group of fifty-two cases which presented the common symptom of jaundice. As the number and variety of these cases of icterus increased, it became more and more obvious that there existed in the duodenal tube a valuable instrument for gathering additional data bearing on the differential diagnosis of these conditions. It is logical and rational that a tube which can enter the duodenum and rest opposite the exit of the bile and pancreatic ducts should bring home most instructive data pertaining to the patency or non-patency of these structures. As the disease processes that cause the varieties of jaundice vary in each type of case, just so do the duodenal contents vary, until there becomes clearly evident a duodenal picture characteristic of each type of disease. An idea of the number of variations possible may easily be gathered by a glance at the following list of alternatives:

1. Both ducts may be closed.
2. Both ducts may be open.
3. The bile duct may be open, the pancreatic duct closed.
4. The bile duct may be closed, the pancreatic duct open.
5. The bile duct may be partially closed, the pancreatic duct open.
6. The bile duct may be open, the pancreatic duct partially closed, or the pancreas diseased.

As every disease gives a fairly constant duodenal picture, so conversely, the establishment of definite duodenal data points to certain recognized pathologic processes.

The technic of duodenal aspiration is by now so familiar to the medical public that a detailed description need not be entered on at this moment. I have in two previous publications[1] described in detail this technic. Suffice here to say that the Einhorn duodenal tube was utilized, being swallowed by the patient at night, and left in situ until morning. Then, two hours after the administration of a milk test meal, the contents of the duodenum were steadily aspirated for five minutes, measured, titrated and chemically examined.

We may proceed to discuss the duodenal picture characteristic of each pathologic process:

CHOLECYSTITIS AND CHOLELITHIASIS

This group (Table 1) comprises twelve patients suffering from gall-stones and gall-bladder infections, who have in the course of their disease evidenced jaundice at some time as a symptom. Cases of stone impacted in the common duct and giving the picture of continuous obstruction are separately discussed in the next subdivision.

As is well known clinically, we may note a gall-bladder full of stones, or various degrees of cholecystitis, without the occurrence of icterus at any time. But it is much more usual to observe a transient or more permanent jaundice, usually at the time of the acute attack, and usually explained as the passing of a stone through the cystic or the common duct. In this series of duodenal examinations the findings are constantly those of open bile and open pancreatic ducts. The bile, even when collected at the time of jaundice, is abundant in the duodenum, usually heavy, viscid and dark green, and an excess of mucus is visible. It would seem that a stone passing down the ducts does not at any time more than slightly obstruct the lumen. The pancreatic duct is always patent; in two of the twelve cases, a distinct diminution of the strength of the ferments pointed strongly to a pancreatitis as a complication.

TABLE 1.—CHOLECYSTITIS AND CHOLELITHIASIS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Cholelithiasis	+	+	10	1: 5,800	0
2. Cholelithiasis-cholecystitis	+	+	12	1:12,000	6.3
3. Cholelithiasis	+	+	30	1: 1,000	10.0
4. Cholelithiasis	+	+	24	1:18,000	3.6
5. Cholelithiasis (after operation)	+	+	0	1: 5,000	1.0
6. Cholelithiasis (pancreatitis)	+	+	0	1: 3,000	0
7. Cholelithiasis (stone in cystic duct)	+	+	2	1: 4,300	0.6
8. Cholelithiasis (repeated attacks)	+	+	18	1:30,000	0
9. Cholelithiasis	+	+	30	1: 6,000	8
10. Cholelithiasis (pancreatitis suspected)	+	+	20	1:10,000	9.9
11. Cholelithiasis	+	+	18	1:10,000	3.0
12. Cholelithiasis	+	+	45	1:30,000	13.5

CATARRHAL JAUNDICE

Opportunity was offered for duodenal examination in only one case (Table 1), this, however, during the height of the jaundice. An abundant thin yellowish bile was obtained, containing normal pancreatic ferments.

IMPACTED COMMON DUCT STONE

Six cases were studied (Table 2). In five of them bile was found in the duodenum; in three of the five cases the full golden yellow bile coloration was replaced by a lighter yellow tint as of partial obstruction of the duct. The pancreatic ferments were present in full amount. In only one case was the obstruction so complete that no bile entered the intestine. This case was one of a very large calculus, firmly imbedded in the lower portion of the ductus choledochus; back of this stone were crowded several other smaller ones, also firmly set in the duct.

The retention of a permeable lumen in the common duct in cases of stone is not surprising, for it has long been known to clinicians that such obstruction caused by a stone is rarely a complete one. A positive test

* From the Pathological Laboratory, Department of Physiological Chemistry, Mt. Sinai Hospital.

1. Crohn, B. B.: Proc. Eighth Internat. Congress Applied Chemistry, 1912; Am. Jour. Med. Sc., 1913, cxiv, 393.

in the stool for bilirubin, when found, has been regarded as a point in favor of the diagnosis of benign versus a malignant condition at the area of obstruction. In a case of protracted jaundice with clay-colored stool, bile in the duodenal contents, even when diminished in quantity, speaks strongly for calculus, just as its complete absence furnishes strong presumption of malignancy.

STRICTURE OF THE COMMON BILE-DUCT

Three cases of post-operative strictures of the bile-duct were studied (Table 2). In all three, drainage of the choledochus had been practiced; the delay in the closure of the laparotomy sinus had led to the duodenal examination. In two instances no bile was found; pancreatic ferments were abundant. The stricture was evidently above the point of junction of the bile and pancreatic ducts; also it was a complete one.

In the third case, while the laparotomy sinus persisted in giving exit to bile, duodenal examination demonstrated a fairly free flow of bile into the intestine, only a slight diminution being noted. The pancreatic ferments were again normally present. In this case, the physical condition of the patient being poor, secondary operation for closure of the sinus had been delayed because of the fear of a secondary or newly formed carcinoma of the bile-duct. The free flow of bile removed in great part this fear; radical intervention was again attempted and stricture of the bile-duct, together with more calculi, was found.

Thus it is seen that postoperative stricture of the bile-duct resulting from the operation of choledochotomy may be complete or incomplete. Complete obstruction of the duct may here be mistaken for carcinoma of the biliary system, though the latter condition has never been seen clinically in my limited experience to occur anew so soon after a primary operation for calculus. A carcinoma, however, may have been overlooked at the primary operation. Partial stricture of the choledochus following choledochotomy makes improbable the existence of a neoplasm and allows the surgeon to extend the time for a natural closure of the abdominal sinus.

TABLE 2.—CATARRHAL JAUNDICE

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Acute catarrhal jaundice	+	+	30	1:20,000	?
COMMON DUCT STONE					
1. Common duct stone (passed on the day succeeding duodenal exam.)	+	+	12	1: 1,000	0
2. Multiple stones, recurring after operation	+	+	15	1:10,000	3.9
3. Common duct stone	+	+	15	1:20,000	5.4
4. Common duct stone (hepatic cirrhosis)	+	+	27	1:30,000	—
5. Common duct stone	+	+	18	1:10,000	9
6. Multiple common duct stones	0	+	12	1:10,000	6
POSTOPERATIVE STRICTURE OF BILE-DUCT					
1. Complete stricture	0	+	30	1: 4,000	0
2. Complete stricture	0	+	24	1: 1,000	0
3. Incomplete stricture	+	+	15	1:30,000	12

TABLE 3.—NEOPLASMS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Carcinoma of liver and gall-bladder	0	+	18	1: 4,300	1.5
2. General abdominal carcinomatosis	0	+	4	1: 4,000	2.4
3. Cancer, bile duct and liver	0	+	20	1: 1,000	1.5
4. Sarcoma of duodenum (First exam.)	0	0	0	0	0
4. Sarcoma of duodenum (Second exam.)	+	+	4	1: 600	3.4
5. Cancer of papilla of Vater	0	+	12	1: 4,300	1.2
6. Cancer of papilla of Vater (First exam.)	+	+	24	1:36,000	3.3
6. Cancer of papilla of Vater (Second exam.)	0	+	6	1: 6,000	2.1
7. Cancer of papilla of Vater	0*	0	0	0	0
8. Cancer of papilla of Vater	+	+	12	1: 4,300	2.4
9. Cancer of terminal bile duct and pancreas	0*	0	0	0	0
10. Cancer of terminal bile duct and pancreas	0	0	0	0	0
11. Cancer of head of pancreas; chronic pancreatitis	0	Diminished Ferments	6	1: 430	0
12. Cancer of head of pancreas (First exam.)	+	+	24	1:10,000	1.5
12. Cancer of head of pancreas (Second exam.)	0	+	9	1:10,000	1.5
13. Lymphosarcoma of duodenum	0*	0	0	0	0
14. Carcinoma of hepatic duct	0	Diminished Ferments	0	1: 430	0

* Blood present in the duodenal contents.

NEW GROWTHS INVOLVING THE BILIARY SYSTEM

There are fourteen cases in this series (Table 3), comprising both carcinoma and sarcoma, subdivided into two groups: (1) new growths not involving the pancreas or its excretory ducts, and (2) new growths originating in or involving the pancreas and its duct. The first group includes neoplasms that implicate the biliary system in its course from the beginning of the extrahepatic portion to its entrance into or alongside of the pancreas. There are three such illustrations in this series. (Cases 1, 2, and 3, Table 3.) These are cases of cancer of adjacent organs involving the choledochus by direct extension. They invariably present complete absence of bile from the duodenum; the pancreatic duct is, as would be expected, always patent.

The second group includes those new growths involving the pancreas and its ducts. Eleven cases are mentioned under this division, including carcinoma

and sarcoma. (Cases 4 to 14, inclusive, Table 3.) Six of these eleven cases (55 per cent.) presented complete absence of both bile and pancreatic ferments from the duodenum. The diagnosis possible when both ducts are completely obstructed is an absolute one, as no condition has yet been seen which can be confounded with it.

In the remaining five cases, the diagnosis from the duodenal examination was more complicated, owing to the fact that secondary ulceration of the new growth had released some of the pent-up secretions. Yet in four of these five cases the complete absence of bile at some time made possible the diagnosis of neoplasm. In the fifth, an ulcerating tumor of the papilla of Vater, and examination of the duodenal contents demonstrated the presence of abundant bile and pancreatic ferments, in spite of persistent jaundice. (Case 8, Table 3.) Fever, intestinal hemorrhage and rapid progressive emaciation, however, corroborated an evident clinical diagnosis.[2]

In a series of over 120 general cases, blood in the duodenal contents has been encountered only three times, two of these cases being proved carcinomas of the papilla of Vater, and the third a case of abdominal new growth whose exact nature was not ascertained. The association of bloody duodenal contents with new growth is evident from these figures, yet it must be borne in mind that this series includes no instances of duodenal or gastric ulcer of non-malignant type. Bondi,[3] in a much smaller series of cases, reports finding blood in many instances, and denies its significance as an indication of ulceration. Chase and Myers,[4] in a series of twenty-nine cases, found no blood in any of their examinations, nor did Frank[5] or Einhorn,[6] working with fairly large series. I would be inclined to attribute the frequent finding of blood by Bondi to a difference of technic, too much force being brought to bear in aspirating the contents of the duodenum. Further data, however, should be collected before bloody duodenal contents can be accepted as an evidence of ulceration, or new growth.

In review of the fourteen cases of neoplasm, thirteen presented a complete closure of the bile-duct; this is a reliable sign of the diagnosis of new growth. Six cases gave the additional evidence of closure of the pancreatic duct, further localizing the lesion at the junction of the bile and pancreatic systems in the head of the pancreas. The latter sign is an infallible one.

PANCREATITIS

In one case of acute suppurative pancreatitis, bile was scant; only a trace of one of the three principal ferments of the gland was present. In four instances of chronic pancreatitis the diagnosis was made by the finding of diminished ferments in the duodenal contents (Table 4). The diminution in the strength of the ferments was unquestionable and marks a deviation from the normal figures for the enzyme values as found in this large series.

As regards bile, the free entry of bile into the duodenum is no index of the extent of the disease; in two instances bile was entirely unobstructed; in the third case bile was only scantily present (on another examination, absent). This was a case of chronic sclerosing pancreatitis, resulting in the complete strangulation of the bile-duct and pancreatic tissue by the cirrhotic process. The fourth case was complicated by a small, probably secondary carcinoma at the head of the pancreas near the choledochus. In this case, no bile was found in the duodenum and the ferments were also found markedly deficient. The laboratory diagnosis of combined neoplasm and chronic inflammation was confirmed at the necropsy.

TABLE 4.—PANCREATITIS

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Acute pancreatitis	±	Markedly diminished	0	0	1.8
2. Chronic pancreatitis	+	±	—	1: 3,000	2.7
3. Chronic pancreatitis	0	±	6	1: 430	—
4. Chronic pancreatitis (First exam.)	0	±	0	1: 4,300	0
4. Chronic pancreatitis (Second exam.)	±	±	0	1: 3,000	2.0
5. Chronic pancreatitis	+	±	0	1: 3,000	0
HYPERTROPHIC HEPATIC CIRRHOSIS					
1. Hypertrophic cirrhosis of liver	++	+	27	1:18,000	
2. Hypertrophic cirrhosis of liver	++	+	15	1: 4,000	1.7
3. Hypertrophic cirrhosis of liver	++	+	12	1:30,000	6
4. Hypertrophic cirrhosis of liver	+	+	4.5	1:10,000	3.9
5. Hypertrophic cirrhosis of liver	+	+	26	1:30,000	2.1
6. Hypertrophic cirrhosis of liver, pancreatic infect. (First exam.)	++	+	0	1: 430	0
6. Hypertrophic cirrhosis of liver, pancreatic infect. (Second exam.)	++	+	0	1: 4,300	0

TABLE 5.—UNCLASSIFIED JAUNDICE CASES

Case	Bile	Ferments	Amylase, c.c.	Trypsin	Lipase, c.c.
1. Hemolytic icterus	+	+	21	1:10,000	1.3
2. Pylephlebitis	+	+	15	1: 4,300	2
3. Syphilitic hepatitis	+	+	18	1: 600	5.7
4. Syphilitic hepatitis; diabetes	+	++	15	1:30,000	16.2
5. Syphilitic hepatitis	+	+	6	1: 4,300	0.7
6. Chronic endocarditis; jaundice	+	+	18	1: 4,300	1.5

2. This subject is more fully considered in an article published in the American Journal of the Medical Sciences, 1914, cxlviii, 839.
3. Bondi: Arch. f. Verdauungskr., 1913, xix, 692.
4. Chase, A. F., and Myers, Y. C.: The Examination for Diagnostic Purposes of the Enzyme Activity of Duodenal Contents, Arch. Int. Med., December, 1913, p. 628.
5. Frank: Arch. f. Verdauungskr., 1912, xviii, 121.
6. Einhorn: Am. Jour. Med. Sc., 1914, cxlviii, 490.

Thus it is seen that the duodenal contents afford a good basis for the diagnosis of pancreatitis, both in the diminution of enzymes and, when it occurs, diminution of the bile.[7]

HYPERTROPHIC CIRRHOSIS OF THE LIVER

Six cases were encountered in the course of four years. The result of duodenal studies is an almost uniform finding of a superabundance of bile, and an overactivity of pancreatic ferments (Table 4). When quite typical, one cannot mistake the chemical evidence. The bile is thin, light yellow and watery, and flows in large amounts; yet there is no dilution of the strength of the ferments, for here the highest figures, particularly for trypsin, are seen.

MISCELLANEOUS CASES (Table 5)

In this category appear:

1. Three cases of syphilitic hepatitis, with jaundice. In two of them, bile and enzymes lacked any abnormal characteristics. In the third (Case 4, Table 5) the typical chemistry of a non-specific hypertrophic cirrhosis occurred.

2. A case of hemolytic jaundice, acquired type; duodenal contents were normal.

3. A case of pylephlebitis.

4. A case of chronic endocarditis and enlarged liver, with jaundice. In these cases nothing abnormal was noted.

SUMMARY

Passing in review the most evident features of duodenal content examinations in the various pathologic conditions, we note the following:

Cholecystitis and cholelithiasis usually cause temporary, and then only partial, diminution in the bile outflow; pancreatic ferments remain normal unless a complicating pancreatitis is present.

Catarrhal jaundice has no characteristic changes.

In impacted common duct stone, even in the presence of long-standing jaundice, bile and ferments usually enter the duodenum quite readily. Only one exception to this rule has so far been noted. The real value of this report lies in its contrast with that in neoplastic obstructions.

In benign, postoperative stricture of the bile-duct, the obstruction to bile may be partial or absolute.

In thirteen out of fourteen cases of icterus due to neoplasm (93 per cent.) the obstruction to bile was absolute. In six instances (43 per cent.) the external pancreatic secertion was, in addition, completely shut off. Secondary ulceration of the new growth may, for a time, allow leakage of small quantities of one or the other secretion. Rarely, as in tumors of the pancreas itself, no obstruction to the ducts is observable, and the enzymes of the gland may themselves be normally present.

Blood in the duodenal contents is strongly suggestive of new growth.

Hypertrophic cirrhosis of the liver, with long-standing jaundice, shows not only no obstruction to bile, but on the contrary, a hypersecretion of both bile and ferments.

In pancreatitis, the entrance of bile into the duodenum is frequently obstructed; in advanced cirrhosis of this organ, the obstruction to bile may be a complete one. Pancreatic ferments readily enter the duodenum, but the marked diminution in the strength of these ferments is characteristic of the disease.

To the clinician at the bedside there is no more difficult problem to solve than the causation of a long-continued jaundice. There may be as much, if not more pain with neoplastic obstruction of the bile-ducts as with impacted calculi. Courvoisier's law of a tense and enlarged gall-bladder as an index of new growth is valuable when positive; the inability to feel an enlarged gall-bladder in persons difficult to palpate often leaves this valuable sign in doubt. Chronic pancreatitis, a not very uncommon disease, may give a clear history of pain and may present a large, tense gall-bladder with persistent and severe icterus. In all three conditions disturbance of nutrition and loss of weight occur. Intestinal hemorrhage, associated with a remittent temperature, speaks strongly for an ulcerating neoplasm. The finding in the stool of free fat and abundant undigested muscle fibers, when they do occur, is characteristic of pancreatitis.

Fortunately, the duodenal contents are often of the greatest value in those most difficult and frequent cases in which pathognomonic clinical signs are absent. If the chemical examination shows both ducts open, a benign stenosis is most likely; partial closure of the bile-duct with open pancreatic duct usually points to an impacted common duct stone. Complete closure of the one or the other duct generally means neoplasm, particularly when blood is present in the duodenal contents. Complete closure of both ducts occurs only in new growth. Definite diminution of ferments points clearly to pancreatitis; this is usually accompanied by some diminution of bile.

Lastly, and with greatest emphasis, it must be said that when the duodenal content examination is not well defined, pointing to a result of a definite pathologic process, the interpretation of the laboratory findings must be influenced by the clinical points of the case, as well as by the examination of the stool.

One of the most vulnerable points in duodenal content diagnosis is in the following type of case: A middle-aged man presents the clinical picture of obstructive jaundice probably of malignant origin. The examination of duodenal contents shows the presence of both bile and ferments, the latter in undiminished strength. This finding would indicate a benign rather than a malignant condition. And yet, should blood be present in the stools, grossly or chemically, should irregular fever and leukocytosis occur, the case may more rationally be diagnosed as an ulcerating carcinoma, probably of the papilla of Vater. In such an instance, a knowledge of the pathology of such tumors must be recalled, and their tendency to ulcerate and necrose be remembered. The duodenal findings must be overruled by the stronger clinical evidence, testifying to the fact of evident ulceration, hemorrhage and ascending infection of the bile passages. If the duodenal content examination be repeated, one may be fortunate enough, as has more than once occurred to me, to find complete absence of bile; this is a confirmation of the clinical diagnosis. Fortunately, in about 80 per cent. of the cases of tumor, complete absence of bile is ascertained at the very first examination.

All in all, rules may be formulated for the occurrence of certain findings in each of the pathologic conditions usually encountered; these rules are based on the *majority* of the chemical examinations in such

7. In a subsequent paper, the subject of pancreatitis, its duodenal findings and metabolism studies will be more fully considered.

cases; exceptions to the rules, as to all biologic rules, do occur.

ILLUSTRATIVE CASES

To illustrate concretely the value of duodenal content examination in differentiating icteric conditions, a few well-chosen examples are appended.

CASE 1.—(From the medical service of Dr. N. E. Brill).—A. B., man, aged 43, had suffered for twelve years from loss of appetite, with occasional attacks of nausea and vomiting. Two weeks before being seen he suddenly noted jaundice, and before entering the hospital had several attacks of mild abdominal cramps. Duodenal content examination showed abundant bile and ferments. A diagnosis of benign stenosis, probably of stone, was offered. Within a few days the icterus began to clear up; the patient was kept under observation for several weeks, and discharged eventually with the diagnosis of cholelithiasis.

CASE 2.—(From the medical service of Dr. E. Libman).—L. K., a woman aged 68, suffered for four months with jaundice, pruritus, loss of weight and occasional attacks of abdominal pain. Repeated examinations of duodenal contents revealed complete absence of both bile and ferments. Blood was present in the aspirated material; a definite diagnosis of new growth was made. Advancing anemia, melena and the later occurrence of signs of pancreatic gland destruction (typical stool changes) occurred. The necropsy demonstrated a typical advanced carcinoma of the terminal portion of the bile-duct invading the pancreas.

CASE 3.—(From the surgical service of Dr. Charles Elsberg).—M. S., a woman aged 48, suffered for three months with weakness, emaciation and jaundice. Duodenal contents demonstrated complete absence of both bile and ferments; blood was also present. A definite diagnosis of tumor was made. This was confirmed at the operation, at which a large new growth was felt involving the duodenum and head of the pancreas.

CASE 4.—(From the medical service of Dr. N. E. Brill).—L. J., man, aged 48, complained for eight days of painless jaundice. His physical examination was negative except for slight hepatic enlargement. Duodenal examination demonstrated the presence of both bile and ferments. A diagnosis of catarrhal jaundice was offered; within a few days the jaundice began to disappear and the patient was discharged, apparently well.

Seven weeks later, he was readmitted to the hospital, deeply jaundiced, running a septic type of temperature and showing blood in his stools. Duodenal contents now demonstrated complete absence of bile; ferments were normally present. The duodenal diagnosis was now one of new growth, with ulceration. At the necropsy an ulcerated carcinoma of the papilla of Vater was ascertained.

It is evident that the first duodenal examination was made at a time when advanced ulceration had liberated the ducts. The second examination, a few weeks later, and after renewed growth on the part of the tumor, more nearly approached the typical chemical data of neoplasm.

CASE 5.—(From the service of Dr. N. E. Brill).—S. R., man, aged 37, suffered for seven weeks with jaundice and diarrhea. He had had at the beginning of his illness an attack of abdominal cramps. Loss of weight was marked. The physical examination revealed an enlarged liver and palpable gall-bladder. Duodenal examination showed absence of bile and diminished pancreatic ferments. A diagnosis of sclerosing pancreatitis was made. A confirmatory duodenal examination, made some days later, showed some bile entering the intestine and pancreatic ferments again markedly diminished. At the necropsy chronic intralobular pancreatitis was definitely established as the cause of the symptoms.

41 West Eighty-Third Street.

Preventogram.—Fresh, clean air is the best antidote, as well as one of the best remedies, for pulmonary tuberculosis.—*Buffalo Sanitary Bull.*

GASTRO-INTESTINAL STUDIES

VI. THE IMPOSSIBILITY OF INTERPRETING THE FINDINGS OBTAINED BY THE CUSTOMARY EXAMINATION OF THE TEST MEAL *

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PHILADELPHIA

It is my purpose in this paper to show that it is practically impossible to interpret correctly the findings, or rather the figures obtained from a test meal extracted in the usual manner. The literature is full of the inconsistencies encountered in ordinary gastric testing and strange results, oftentimes in discord with clinical symptoms, have caused the clinician to rely less and less on the examination of the test meal as an index of gastric function. And yet the examination of the gastric juice must always remain the only true method in the determination of gastric function. Two things stand out prominently in the whole category of functional testing: (1) the fact that a definite stimulus produces under identical conditions practically always a constant result; and (2) anatomic and pathologic changes result almost always, although not invariably, in change in function. If the gastric response did not in a way reflect the condition of the organ, it would be the first organ which does not follow known physiologic laws. As the urine will, despite the efforts of certain clinicians, represent and reflect the condition of renal permeability and renal work, so must the secretory output of the stomach reflect the condition and working response of that particular organ. But it is as absurd to expect information of gastric function from the examination of a single specimen at an isolated phase as it is to obtain an accurate idea of renal efficiency from the examination of a single specimen after the administration of phenolsulphonephthalein, for example. That it is working, perhaps we can say; how it is working, it is impossible to say. The examination of the gastric juice must remain, together with a determination of its motor function, the true methods for estimation of gastric function, and newer knowledge only begins to suggest the multitude of causes which can react on the elaboration of the secretion—the condition of the mucosa, the actual tonicity of the vagus and sympathetic filaments, the condition of hyper- or hypo-activity of the ductless glands, the elaboration of hormones and secretagogues, the intactness of the evacuating system, the presence of inhibitory or stimulating, toxic, chemical, or irritating substances in the blood, and finally, the question of excretion—which all play a part in elaboration and subsequent character of the gastric secretion. But more than this, the addition of ulcerous, inflammatory and neoplastic products all lend, in a certain sense, their properties in adding to or modifying the final product. The discussion of these points is entirely out of place in this paper. The important point is the impossibility of interpreting the findings after the routine method employed at present.

In the literature the idea of making a fractional examination of gastric digestion is by no means new. Perhaps to Hayem belongs the credit of studying most carefully the secretory output in various conditions, but his method was crude and his curves show the irregular intervals necessitated by such an examina-

* From the Laboratory of Physiological Chemistry of the Jefferson Medical College.

tion. Practically all examinations which were conducted on the gastric secretion in the human subject used the method by which the subject received a definite test meal which was emptied in ten minutes on one day, on the following day in twenty minutes, on the third day after thirty minutes, and so on, until the entire cycle of gastric digestion was completed. Many authors have investigated the gastric secretion at

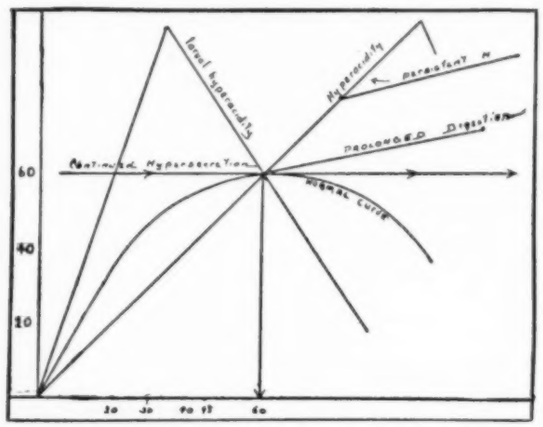

Fig. 1.—Possibilities in the interpretation of normal figures of the one-hour examination.

various periods, Ewald and Boas,[1] then Reichmann,[2] v. Jaksch,[3] and Kornemann,[4] in 1885, published a most comprehensive series of observations on the digestion of milk in a healthy young man of 20. After habituating his subject to the passage of the tube, he commenced his series, removing the milk on successive days after increasing time intervals.

Von Jaksch[3] records a series of tables indicating the effect of milk, tea, carbohydrates and meat in children. These were administered and removed at various intervals by means of the sound. His observations are of interest and he shows that the position of the high point differs according to the diet ingested. He makes the statement, however, that after the administration of weak tea and saccharin, free HCl is detected in 78 per cent. of the cases in three-quarters of an hour, but after feeding milk or meat he could detect its presence in the first quarter of an hour.

Schule's[5] observations are quite complete, but unfortunately restricted to four individuals, although they are repeated, and different articles of diet were investigated. After tea and toast, for instance, while the majority of high points were encountered at sixty minutes, several were found at forty-five and seventy-five minutes, respectively.

Kornemann[4] gives fifty minutes as the point at which the free HCl reaches its height after the administration of a test breakfast. With 35 grams of roll and 250 grams of tea, he finds the stomach empty in two and one-half hours.

Ehrenreich,[6] perhaps, published the first satisfactory results of a complete examination of the gastric cycle and utilized for that purpose a Nelaton catheter. He showed that examinations at quarter-hour intervals demonstrated that the pepsin concentration rapidly reached its maximum (after twenty to thirty minutes) and then had a tendency to remain constant, while the acid concentration reached its maximum only after seventy minutes. Gregerson[7] criticizes the method, inasmuch as apparently a great deal of saliva and mucus is formed by Ehrenreich's method. Some twenty-two cases were enumerated by Ehrenreich, insufficient to draw any interpretation of the interesting findings which he recorded.

Gregerson's cases, while few in number, are interesting and instructive, but the method, as were other methods enumerated above, is entirely impractical.

The value of the fractional tube lies in the fact that by means of its weight, the tip seeks the bottom of the stomach by gravity; secondly, with few exceptions, it is well borne and if the patient is encouraged to expectorate any saliva, the specimens are clean and representative of the gastric contents, while at any moment the entire gastric content can be evacuated. It is therefore absolutely impossible to form any opinion regarding the interpretation to be drawn from an examination of the gastric juice in the one-hour interval.

1. This point records but one phase in the ever changing cycle of gastric digestion.
2. A large number of observations have shown that this point is by no means the high point or the representative one.
3. Many changes may both precede or follow this point.
4. Many forms of hyperacidity, hypersecretion, occult bleeding are entirely overlooked in this way.
5. Delay in digestion may mean that figures at the one-hour point may be doubled at the second hour.
6. No idea of evacuation or the motor function of the stomach can be obtained by this method.

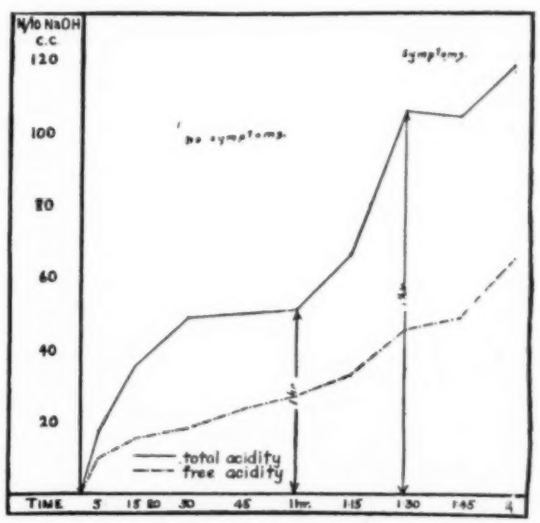

Fig. 2.—Curves of total acidity and free acid in Case 1 (Mr. W.). Note the difference in the figures at the period and the findings at one and a half hours.

7. That entirely erroneous conclusions may be drawn must be evident from the following cases.

These cases are drawn from more than 300 complete fractional examinations of the entire gastric cycle after the administration of the Ewald meal and almost 200 fractional examinations after the administration of

1. Ewald and Boas: Virchows Arch. f. path. Anat., 1885, ci, 325.
2. Reichmann: Ztschr. f. klin. Med., 1885, xxiv, 565.
3. Von Jaksch: Ztschr. f. klin. Med., 1890, xix, 383.
4. Kornemann: Arch. f. Verdauungskr., 1912, p. 369.
5. Schule: Ztschr. f. klin. Med., 1895, xxvii, 461.
6. Ehrenreich: Ztschr. f. klin. Med., 1912, p. 231.
7. Gregerson: Arch. f. Verdauungskr., 1913, xix, 263.

various food substances, in normal individuals. They are merely given to demonstrate the impossibility of drawing any conclusions from the customary gastric examination. For instance:

1. The test meal at the one-hour period reveals normal total acidity and free acid figures.

So-called normal total free acid figures at one hour may mean (1) perfectly normal digestion, such as has

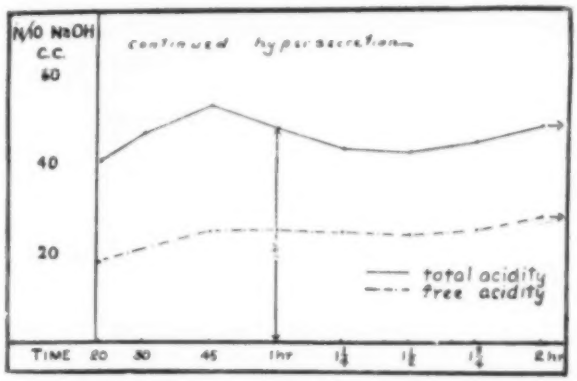

Fig. 3.—Curves of total acidity and free acid in Case 4. Continued hypersecretion. A case of mediogastric contraction from gastric adhesions (operation).

been recorded elsewhere; (2) but it may mean something entirely different. A glance at the diagram (Fig. 1) will show the possibilities (1) a normal curve; (2) high figures following this point, in reality the tardive hyperacidity of the French, either sustained or abrupt and with or without hypersecretion; (3) it may mean an absolute constant acidity such as is seen in certain hypersecretion or obstructive cases; (4) it may mean hyperacidity after the manner of the so-called Strauss larval hyperacidity preceding the one-hour point and falling at that point to or near normal. At the same time all forms and types of motor aberrations may occur.

A. Normal figures at the one-hour point may be followed by hyperacid figures at the two-hour point. This is illustrated by the cases in Table 1.

TABLE 1.—TOTAL ACIDITY AND FREE ACID AT ONE- AND TWO-HOUR PERIODS

Case 1. Mr. W.			Case 2. Mr. E.		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/12	17.2	10.0	1/6	16.0	8.5
1/4	35.2	15.4	1/4	14.0	8.0
1/2	48.1	18.0	1/2	17.0	8.0
3/4	49.0	23.2	3/4	37.5	28.5
1	54.4	27.0	1	53.0	44.5
1¼	66.0	33.0	1¼	69.0	60.5
1½	106.0	45.3	1½	94.0	85.5
1¾	104.5	48.3	1¾	93.0	83.0
2	118.6	64.7	2	85.0	76.0
			2½	19.0	11.5

In these cases, the discrepancy between the one-hour findings and the curve is pronounced. Case 1 (Fig. 2) shows two-hour figures more than double those obtained at the one-hour point and an added factor, hypersecretion, was observed. Furthermore, all the subjective symptoms occurred after the one-hour point. In the second case the symptoms were pronounced late in digestion and the patient was free from symptoms at the one-hour point.

B. Normal figures at the one-hour point may be preceded by hyperacid figures. Such a case is shown in Table 2, which emphasizes the possibilities of the so-called Strauss larval hyperacidity.

TABLE 2.—NORMAL TOTAL AND FREE ACIDITY AT ONE-HOUR POINT PRECEDED BY HYPERACIDITY

Case 3, Mr. F.		
Time, Hours	Total Acidity	Free Acid
1/12	6.7	Trace
1/4	19.8	7.5
1/2	25.3	14.0
3/4	75.7	53.3
1	43.7	24.0
1¼	18.2	9.5
1¾*	24.5	11.5

* Stomach empty—hypermotility.

C. Normal figures at the one-hour point may be only part of a continued hypersecretion or obstructive phenomenon. This is seen in the cases in Table 3.

TABLE 3.—NORMAL FIGURES AT THE ONE-HOUR POINT

Case 4 (Fig. 3)			Case 5		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/3	40.7	18.5	1/12	49.9	36.4
1/2	47.0	....	1/6	57.1	45.2
3/4	50.3	25.6	1/4	59.2	42.0
1	48.2	25.9	1/2	60.8	43.4
1¼	43.5	25.0	3/4	58.2	44.0
1½	42.7	24.3	1	61.2	46.0
1¾	44.9	25.7	1¼	62.9	47.8
2*	48.4	28.5	1½	61.7	47.2
			1¾	67.6	44.6
			2	68.4	49.6
			2½	68.0	48.6

* Marked hypersecretion throughout.

Therefore normal figures at the one-hour point might be of varied significance, depending on the secretory phenomena which have preceded or followed this point.

The first variety, namely, the normal figures at one hour, followed by figures indicating hyperacidity in later phases of digestion, is particularly common.

2. Hyperacid figures at one hour may be of varied significance depending on the character and duration of the findings, and this is only revealed by fractional testing. The cases in Table 4 (Figs. 4 and 5) both reveal figures indicating a hyperacidity at one hour but a study of the curve will reveal the difference in their significance.

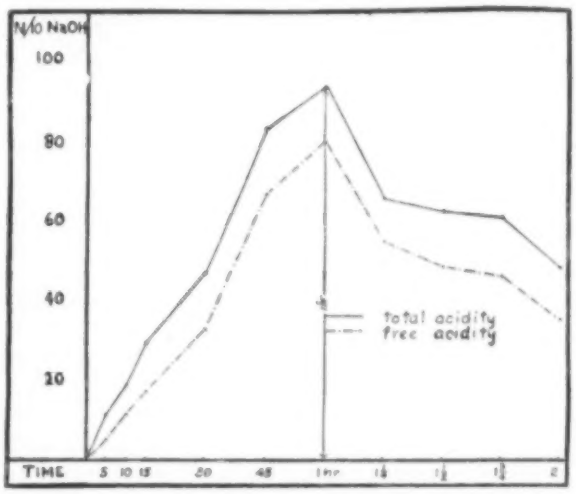

Fig. 4.—Curves of total acidity and free acid in Case 6 (Mr. J.). Abrupt hyperacidity; motor function normal.

In these cases the one seen to be more or less abrupt was easily controlled by simple dietetic measures; the other dominated the entire gastric phase after the 3¼-hour period and was accompanied by hypersecretion.

3. Subnormal figures at the one-hour point may indicate in general a subnormal curve. They may also

indicate delayed digestion with normal figures later in digestion, and may in certain cases be followed by actual hyperacid figures.

The cases in Table 5 represent (Case 8, Fig. 6) subacidity at one hour and normal figures at the two-hour period, and (Case 9) figures which may be classed as those of hyperacidity.

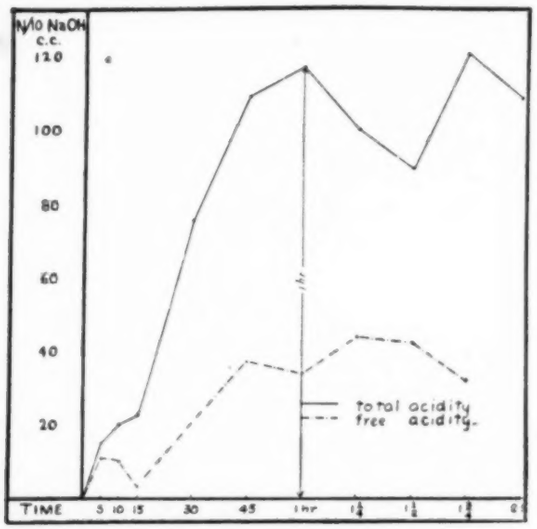

Fig. 5.—Curves of total acidity and free acid in Case 7 (Mrs. W.). Hyperacidity occupying one and one quarter hours.

TABLE 4.—HYPERACIDITY AT ONE HOUR

Case 6, Mr. J.			Case 7, Mrs. W.		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/12	11.0	5.0	1/12	15.4	11.4
1/6	18.5	11.0	1/6	20.2	10.6
1/4	29.0	17.0	1/4	22.7	3.9
1/2	46.5	32.5	1/2	76.0	....
3/4	83.0	67.0	3/4	110.2	37.7
1	93.5	80.0	1	118.2	34.1
1¼	66.0	55.0	1¼	101.2	44.0
1½	62.5	48.5	1½	90.6	42.4
1¾	61.0	46.0	1¾	121.9	32.9
2	48.0	35.0	2	110.0	....

TABLE 5.—CASES REPRESENTING SUBACIDITY AT ONE HOUR AND HYPERACIDITY AT TWO HOURS

Case 8, Mr. Ed.			Case 9.		
Time, Hours	Total Acidity	Free Acid	Time, Hours	Total Acidity	Free Acid
1/6	4.5	Trace	1/12	31.8	....
1/3	10.0	6.5	1/6	41.4	....
1/2	12.5	8.0	1/2	30.2	18.0
3/4	21.0	14.5	3/4	30.2	20.3
1	34.5	....	1	38.8	23.3
1¼	44.5	....	1¼	38.0	26.7
1½	56.0	47.0	1½	43.5	30.0
1¾	41.0	34.5	1¾	43.0	30.3
2	30.5	....	2	50.5	38.0
			2¼	56.3	44.5
			2½*	63.3	52.7

* The end of this curve was followed by pronounced hypersecretion, which was very persistent and gave on an average of several samples taken, total acidity 76.3, free acid 69.8.

These two cases emphasize the utter impossibility of throwing any light on gastric function by the routine method. In the first case digestion was somewhat delayed, but the normal figures were finally attained. In the second case after two hours all the phenomena of a vicious hypersecretion, gnawing pain and hyperacidity appeared, which in the presence of occult blood in the stool and a characteristic tender point justified the diagnosis of duodenal ulcer. This was confirmed by operation.

These cases have been selected from a large number simply to emphasize the points discussed. In practically every instance the study of the fractional specimens reveal points in the evolution of gastric digestion totally unsuspected or unrevealed in the one-hour examination. Hypermotility, hypomotility, actual obstruction, retention, are all revealed in the course of the examination. In early catarrh, as I shall have occasion to point out, the characteristic phenomena only occur late in digestion. The albumin content of cancer is more pronounced as digestion proceeds; the bleeding of ulcers is frequently found only at certain periods and is often delayed. As Ehrenreich has said to have an actual conception of digestion, it is necessary to have not only an isolated picture but a cinematographic series capable of registering the exact tendencies in secretion and fixing exactly the motor end-point.

CONCLUSIONS

1. It is impossible to interpret the figures obtained by the examination of the test meal removed in one hour by the usual technic.

2. The one-hour period represents but one phase in the constantly changing cycle of gastric digestion. While it is true that in a certain proportion of normal cases, the high point is to be found at the one-hour interval, this is by no means always the case, and pathologically every deviation from this type may be encountered.

3. It is impossible to judge what has preceded or what will follow this point, data absolutely necessary to a complete understanding of the case.

4. Delayed digestion, many forms of hyperacidity, hypersecretion, symptoms of early catarrh, occult bleeding, are in many cases entirely overlooked by the customary examination.

5. So-called normal figures at the one-hour point cannot be interpreted in the light of a single isolated phase examination. They may mean (a) a perfectly normal curve; (b) they may be followed by marked hyperacidity, hypersecretion, and motility disturbances at a later period; (c) they may be only one point in a continued high acidity and hypersecretion such as is encountered in obstructive cases; (d) a form of larval hyperacidity, such as I have shown in this paper.

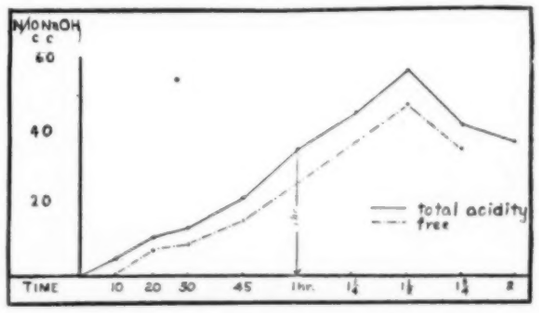

Fig. 6.—Curves of total acidity and free acid in Case 8 (Mr. Ed.). Delayed digestion. Subacid at one hour; normal figures at one and a half hours.

6. Hyperacid figures may be part of an abrupt rise and equally rapid fall, or they may be part of a sustained persistent hyperacidity accompanied with marked hypersecretion and evidences of beginning or pronounced motor disturbances, factors impossible to demonstrate by the ordinary examination.

7. Subacid figures may be part of a general subacid curve, or they may mean a simple delay in digestion

with its complete evolution at a later period. Finally, by no means rare, subacid figures at the one-hour point may be followed by hyperacid figures at a later stage in digestion.

8. The ordinary method can give us evidence of nothing but the crudest anomalies in motor function. The fractional method enables us to determine precisely the end point of gastric digestion.

9. In our studies of the complete gastric cycle, we have found every form of secretory and motor disturbance and have been impressed by the fact that the symptom like the actual motor or secretory disturbance by no means respects the hour period and may be found depending on the nature of the case at any point in the gastric cycle.

My thanks are due to many physicians with whom I have worked, as well as to Drs. Bergeim and Fowler, who have spent many hours in the chemical studies of these cases, and to Dr. Hawk, as always, for his cooperation and assistance.

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THE THERAPEUTIC VALUE OF ORGANIC PHOSPHORUS COMPOUNDS*

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The prescribing of preparations of organically bound phosphorus rests mainly on the theory that such compounds are absorbed and stored as such by the organism, and that the needs of the body for organic phosphorus cannot be supplied by inorganic phosphates. Neither of these ideas, however, has any real scientific foundation, but the evidence is rather conclusive in the opposite direction.

Phosphorus as taken into the organism as a food material exists in inorganic form and organic, for instance lecithins, glycerophosphoric acid, phytin, nucleic acid and phosphoproteins. The problem as to the relative utilization and nutritive value of inorganic and organically bound phosphorus has been approached from three main aspects:

1. The search for enzymes in the organism capable of liberating phosphoric acid from organic compounds containing phosphorus.

2. Metabolism studies of the phosphorus balance, with the feeding of diets containing inorganic or organically bound phosphorus.

3. Studies on the ability of the organism to synthesize complex organic phosphorus compounds from inorganic phosphates by feeding experiments over long periods, and observations on the growth and general functional activity.

In various tissues of the animal body, enzymes have been found which hydrolyze complex organic phosphorus compounds so as to liberate the phosphorus in the form of inorganic phosphates. The occurrence of ferments capable of decomposing nucleic acids, with the liberation of purin bases and phosphoric acid, has been shown for various tissues of the body, and especially for the intestinal mucosa. A phytase which splits phytin into inosit and phosphoric acid has been found in the liver and blood by McCollum and Hart.[1] Lecithin is also apparently decomposed in the intestinal canal, yielding its phosphorus as glycerophosphoric acid, which Grosser and Husler[2] find to be completely decomposed by a ferment present in the intestines and kidney. Sebelien[3] first showed that the phosphorus of casein can be split off as phosphate by the action of trypsin. Plimmer and Bayliss[4] have recently extended this work, and find that trypsin dissolves the phosphorus of casein as phosphate almost completely. Plimmer[5] has systematically tested the action of various animal tissues as regards their ability to hydrolyze organic phosphorus compounds. He finds the intestine to be the most active, and that all organic phosphorus compounds tested (glycerophosphoric acid, hexosephosphoric acid, ethylphosphoric acid, phytin, nucleic acids from thymus, wheat and meat and phosphoproteins), except phytin, were hydrolyzed by it. He concludes that "the organism can synthesize its organic phosphorus from the inorganic form. . . . The organic phosphorus compounds are most certainly assimilated as inorganic phosphate and the organic radical with which the phosphorus is combined." This occurrence of enzymes capable of converting organic phosphorus into the inorganic form explains the fact that very little organically bound phosphorus occurs in either the urine or feces, normally or after feeding organic phosphorus.

The very numerous metabolism studies on the comparison of the phosphorus and nitrogen balances with diets containing organic phosphorus compounds, and the same in which inorganic phosphates alone supplied the phosphorus, have led to somewhat unsatisfactory results. Some investigators find the evidence from this kind of study to point to a more complete absorption and utilization of organic phosphorus than inorganic, while others find no difference in the results, whether the phosphorus be supplied in organic or inorganic form. The difficulty of drawing conclusions from such work, and also the conflicting results, are not surprising when we consider the many factors concerned. Such investigations must take into account the phosphorus eliminated in both the urine and the feces, it being remembered that the feces phosphorus is not alone unabsorbed material, but also absorbed material which is excreted by the intestine. The amounts excreted by the kidney and the intestine bear no constant relation to one another, but are dependent on a number of factors. Thus, the amount of calcium ingested directly influences the amounts of phosphorus excreted in the urine and the feces; the more calcium, the greater the amount eliminated by the intestines at the expense of the kidney. Furthermore, negative results in the feedings of material extracted with alcohol and ether to remove the organic phosphorus must be taken with great reserve, as it is now well known that substances not containing phosphorus (vitamins), but essential to the well-being and even life of the organism, are removed by this treatment.[6] The use of too short a period of observation, and the neglect of the fact that the ingested phosphorus may be excreted slowly, have vitiated many experiments.

* This investigation was undertaken at the suggestion of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association.

1. McCollum and Hart: Jour. Biol. Chem., 1908, iv, 497.
2. Grosser and Husler: Biochem. Ztschr., 1912, xxxix, 1.
3. Sebelien, from Biffi: Virchows Arch. f. path. Anat., 1898, cli, 130.
4. Plimmer and Bayliss: Jour. Physiol., xxxiii, 439.
5. Plimmer: Biochem. Jour., 1913, vii, 43.
6. Funk: Jour. Physiol., 1912, xliii, 395. Steff: Ztschr. f. Biol., 1911, lvii, 135.

Grosser,[7] on a careful critical review of the data, concludes that the balance of evidence from this kind of experiment is in accord with the view that no difference exists whether the phosphorus is supplied in organic or inorganic form.

Hart, McCollum and Fuller[8] found that in the case of growing pigs the quantity of phosphorus necessary is not dependent on the nature (organic or inorganic), but on the needs of the animal. Pigs fed on rations with extremely low phosphorus content at first developed as well as controls, but later there was loss of weight, followed by collapse. Supplementing this low phosphorus diet with either calcium phosphates or organic phosphorus compounds sufficed to produce normal growth and development. The phosphorus in the organic form gave no better results than the inorganic phosphates. McCollum, Hart and Humphrey,[9] working with a cow, conclude that neither the form nor quantity of potassium, magnesium or phosphorus in the diet affected the percentages of these elements in the milk.

Fingerling,[10] comparing the influence on the milk secretion of the feeding of organic phosphorus with that of inorganic phosphorus, found no influence on the quantity, amount of total solids, or percentage of calcium and phosphorus. The organic phosphorus was fed in the form of lecithin, phytin, casein and nucleic acid, and the inorganic as disodium phosphate. He concludes that the organism can satisfy its needs just as well with inorganic phosphates as with organic phosphorus. Other investigators (Wendt,[11] Holsti,[12] Gregerson[13]) have shown that the organism can synthesize organic phosphorus compounds out of inorganic phosphates. In regard to the relative ease and completeness of this synthesis, Fingerling has carried out some very interesting experiments on geese, and McCollum, Halpin and Prescher on hens.

Fingerling[14] selected a flock of geese and fed them during one year on food containing practically no organic phosphorus but only inorganic phosphates. The next year they were fed on a diet rich in organic phosphorus. It was found that the number of eggs laid, their weight and content in lecithin, nucleic acid and phosphorus were the same on the organic-phosphorus-free diet as on the one rich in organic phosphorus. McCollum, Halpin and Prescher[15] found hens capable of synthesizing complex phosphatids, for when fed on a phosphatid-free diet, they laid eggs containing the normal content of lecithin.

The recent experiments of Osborne and Mendel[16] on the amino-acids necessary for maintenance and growth are evidence in the same direction. Rats can be maintained and grow on a diet of phosphorus-free protein and an inorganic salt mixture, and when the growth curve diverges from the normal on this diet, it can be restored by the addition of butter-fat,[17] which contains no phosphorus.

We see that the evidence is very convincing of the view that the animal organism can synthesize its complex organic phosphorus constituents from inorganic phosphates, and that organic phosphorus is of no more value as a food than inorganic. If the organic phosphorus compounds possess any particular efficacy over the inorganic, it is probably due to their containing substances that are necessary in traces to normal nutrition, and not to their organically bound phosphorus. These materials are undoubtedly furnished by any ordinary mixed diet, and in cases in which the introduction of phosphorus is desired to attempt to make possible the synthesis of organic phosphorus compounds in the body, the inorganic phosphates are entirely suitable for this purpose.[18]

7. Grosser: Ergebn. d. inn. Med. u. Kind., 1913, xi, 119.
8. Hart, McCollum and Fuller: Am. Jour. Physiol., 1908-1909, xxiii, 246.
9. McCollum, Hart and Humphrey: Am. Jour. Physiol., 1909, xxiv, 86.
10. Fingerling: Biochem. Ztschr., 1912, xxxix, 239.
11. Wendt: Skand. Arch. f. Physiol., 1905, xvii, 211.
12. Holsti: Skand. Arch. f. Physiol., 1909, xxiii, 143.
13. Gregerson: Ztschr. f. physiol. Chem., 1911, lxxi, 49.
14. Fingerling: Biochem. Ztschr., 1912, xxxviii, 448.
15. McCollum, Halpin and Prescher: Jour. Biol. Chem., 1912, xiii, 219.
16. Osborne and Mendel: Ztschr. f. physiol. Chem., 1912, lxxx, 307, and articles in Jour. Biol. Chem., 1912-1913.
17. Osborne and Mendel: Jour. Biol. Chem., 1913, xvi, 423. McCollum and Davis: Ibid., 1913, xv, 167.
18. No attempt has been made to include a complete bibliography. A very good critical review of this question of the value of organic and inorganic phosphorus and the literature can be found in the article by Grosser in Ergebnisse der inneren Medizin und Kinderheilkunde, 1913, xi, 119.

ALBUMIN IN THE SPUTUM AS A DIAGNOSTIC AID*

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DETROIT

The suppression and cure of tuberculosis depend largely on an early diagnosis of the malady. Any laboratory method, therefore, which would be of value in our diagnosis, since both history and physical findings are often inadequate, would be very desirable.

Among the various methods for the diagnosis of tuberculosis which have been exploited from time to time is one, the albumin-sputum method, which has attracted attention off and on for nearly sixty years, but which never yielded sufficient satisfactory results to warrant its general adoption by clinicians.

REVIEW OF LITERATURE

In 1855 Biermer,[1] investigating this subject, always found albumin positive in acute bronchitis, in pneumonia and in edema of the lungs, but negative in chronic bronchitis and in tuberculosis, the latter showing much mucin.

Renk[1] found albumin negative in chronic bronchitis but always positive in acute bronchitis, pneumonia and tuberculosis, the latter showing from 0.11 to 0.49 per cent.

Bamberger,[1] Panow, Starkow and Lanz found considerable albumin in bronchitis and emphysema, as well as in tuberculosis.

Wanner, after boiling with salt solution and acetic acid, found much albumin in tuberculosis, while there was only a trace or negative in chronic bronchitis and in asthma.

Beranzon and Young[1] found albumin in both tuberculosis and bronchitis.

The observations of Roger and Levy-Valensi[2] gave stimulus to numerous investigators, including Lantz and Hertz,[3] Lecaplain,[4] Terreira,[5] Lesieur and Prires,[6] and many others, all of whom came to the conclusion that a negative test excluded tuberculosis, while a

* Tuberculous material from the Detroit Tuberculosis Sanatorium.

1. Quoted by Berkovitz and Rudas: Berl. klin. Wchnschr., 1913, L, 1752.
2. Roger and Levy-Valensi: Bull. et mém. Soc. méd. d. hôp. de Paris, Sept. 22, 1913; ibid., July 23, 1909; Presse méd., April 20, 1910; ibid., May 20, 1911.
3. Lantz and Hertz: Presse méd., July 18, 1911.
4. Lecaplain: Presse méd., March 11, 1911.
5. Terreira: Presse méd., April 15, 1911.
6. Lesieur and Prires: Paris méd., 1911, iv, 29.

positive test rendered the case very suspicious, but not absolutely confirmatory, since a positive test might occasionally be obtained in other conditions such as pneumonia, edema of the lungs, bronchopneumonia and cardio-renal disease, and that the test is generally negative in acute and chronic bronchitis.

Fishberg and Felberbaun.[7] often found the quantity of albumin infinitesimal or absent in chronic fibroid tuberculosis, but present in active cases, the amount bearing considerable relation to the activity of the process.

Fullerton,[8] investigating 100 cases, noted wide variations in the amount of albumin. He found that tuberculosis generally shows considerable albumin, but that in a small percentage of cases little or no albumin occurs, and that a positive reaction occurs in various diseases of the respiratory tract, such as pneumonia and bronchitis. He concluded that the albumin reaction was not reliable in diseases of the respiratory tract, and of only limited value in tuberculosis.

S. Acs-Nagy[9] decided that the determination of albumin has little importance for practical diagnosis.

J. Kauffmann[10] speaks highly of it, and applies it along with the tuberculin reactions. He found the test negative in bronchitis, but positive in kidney disease and pulmonary edema.

B. O. Works,[11] after precipitating with Esbach's reagent, concluded that most active tuberculosis cases show 2 per cent. or more, while improved cases show less than 2 per cent. and that a negative reaction excluded tuberculosis.

Scott[12] concluded that the test is of no value in the routine diagnosis of tuberculosis, because the reaction occurs in many other affections of the respiratory tract, and is negative in about 10 per cent. of positive pulmonary cases.

Berkovitz and Rudas,[13] who estimated the albumin by both the Kjeldahl and Esbach methods, found that the quantity of albumin in the sputum in respiratory diseases varied between two wide extremes, and concluded that it was of no diagnostic value.

E. Gelderblom[14] states that an increase or decrease of the albumin content of a tuberculous sputum points to an aggravation or improvement of the disease.

E. Hempel-Jorgensen[15] states that the results are not uniform. He found albumin negative in two out of fifteen tuberculous cases. He decides that considerable albumin might indicate tuberculosis, but all other inflammatory or destructive processes of the respiratory tract must be excluded, and concludes that the test is of little positive diagnostic value.

Holm and Himmelberger,[16] estimating the albumin by precipitating with potassium ferrocyanid and centrifuging, in their first communication concluded that the determination of the albumin in the sputum is one of the most important aids in diagnosis and prognosis of tuberculosis that has been introduced in recent years. Later[17] they seemed less enthusiastic, and stated that a negative reaction excludes tuberculosis, but a positive reaction is always present in pulmonary abscess, bronchopneumonia, lobar pneumonia and pulmonary edema, and a negative reaction is generally present in pharyngitis, bronchitis and asthma.

7. Fishberg and Felberbaum: Med. Rec., New York, Oct. 21, 1911.
8. Fullerton: Glasgow Med. Jour., July, 1912.
9. Acs-Nagy, S.: Wien. klin. Wchnschr., Nov. 28, 1912.
10. Kauffmann, J.: Beitr. z. klin. d. Tuberc., 1913, xxvi, No. 3.
11. Works, B. O.: The Quantitative Examination of Albumin in the Sputum in Pulmonary Tuberculosis, THE JOURNAL A. M. A., Oct. 26, 1912, p. 1537.
12. Scott, James R.: A Critical Study of Albumin Reaction in the Sputum of Tuberculosis Patients, THE JOURNAL A. M. A., Feb. 8, 1913, p. 440.
13. Berkovitz and Rudas: Berl. klin. Wchnschr., 1913, L, 1752.
14. Gelderblom, E.: Deutsch. med. Wchnschr., Oct. 9, 1913.
15. Hempel-Jorgensen, E.: Albumin Reaction in Sputum, Beitr. z. klin. d. Tuberc., 1913, xxvi, 350.
16. Holm, M. L., and Himmelberger, L. R.: Quantitative Determination of Albumin in Sputum with Potassium Ferrocyanid, THE JOURNAL A. M. A., Jan. 3, 1914, p. 20.

METHODS

The technic for estimating and detecting the albumin in the sputum has not been uniform, the earlier investigators chiefly using the more accurate Kjeldahl method, while most of the workers in the last four years have used slightly different technic of precipitating the mucin with dilute acetic acid, filtering and applying various albumin tests to the filtrate, such as the nitric acid contact test, the potassium ferrocyanid test, boiling, and for a quantitative determination, the Esbach test.

In all my cases I have first precipitated the mucin by mixing well one part of sputum with one part of 3 per cent. acetic acid and allowing to stand for some time, then adding one part of water, making a mixture of 33⅓ per cent. sputum, mixing well, filtering through gauze and then through a fine filter paper and using the clear filtrate.

TABLE 1.—TUBERCULOUS CASES

No.	Stage	Duration	Average P. M. Temperature	No. Bacilli, Gaffky	Phos. Alb.	Kjeldahl Alb.
1	Mod. far advanced	7 months	99	III	0.5	
2	Far advanced.....	5 years	99	III	0.375	
3	Far advanced.....	15 months	100	II	1.8	
4	Far advanced.....	2 years	100	IV	1.0	2.3075
5	Far advanced.....	2 years	98.6	III	0.2	
6	Mod. far advanced	15 months	98.6	II	0.3	
7	Far advanced.....	Subacute prob. 20 years	99.2	II	1.95	
8	Far advanced; no cavities	6 months	101	II	0.9	2.1
9	Far advanced.....	15 months	101	III	1.5	
10	Mod. advanced....	2 years	99.8	0	0.45	
11	Far advanced.....	7 years	100	IV	0.15	0.80
12	Mod. advanced....	3 months	102	II	0.725 2.40	
13	Far advanced.....	2 years	101	III	0.75 0.50	
14	Far advanced.....	18 months	102	III	2.30 0.95	6.30
15	Mod. advanced.....	6 months	99.5	I	0.82	2.70
16	Far advanced.....	5 years	99.5	II	0.45	1.3125
17	Far advanced.....	2 years	100	II	1.8	
18	Mod. advanced.....	6 months	99	I	0.8	0.60
19	Far advanced.....	3 years	99	III	1.05	0.7875
20	Far advanced.....	11 months	100	IV	2.25	6.27
21	Far advanced.....	5 years	99	III	4.6	1.00
22	Far advanced.....	4 years	100	II	2.7	2.25
23	Chr. fibroid.....	6 years	98.6	0	0.75	2.40
24	Far advanced.....	4 months	99	II	0.23	1.59
25	Far advanced.....	3 months	99	III	0.23	
26	Far advanced.....	8 months	100	II	0.225	0.28075
27	Mod. advanced.....	3 years	98.5	IV	0.194	3.125
28	Far advanced.....	1 year	99	III	0.67	2.5625
29	Far advanced.....	4 years	99	II	0.375	0.5675
30	Mod. advanced.....	2 years	98.5	I	0.29	1.812

Reasoning on the assumption that in tuberculosis there is a digestion of lung tissue, in Tables 1 and 2 I have attempted to compare the albumin and products of albumin digestion found in tuberculous cases, and also to compare the precipitate obtained regarding the stage, duration and activity of the disease.

The clear 33⅓ per cent. filtrate was placed in an Esbach tube to the U mark, then filled to the R mark with a phosphotungstic acid solution, moderately agitated and allowed to stand twenty-four hours, when reading was taken, multiplied by 3 (dilution) and changed to percentage.

17. Holm and Chambers: Jour. Mich. State Med. Soc., April, 1914.

The solution used in precipitating consisted of:

Phosphotungstic acid	1.0 gm.
Hydrochloric acid, concentrated	5.00 c.c.
Alcohol, 95 per cent. q. s. ad.	100.00 c.c.

While the solution is known to precipitate other things besides albumin and products of albumin digestion, it is given preference to the Esbach reagent in quantitative determination of albumin in the urine.

Also in Tables 1 and 2 I have estimated the albumin in many cases by means of the more accurate Kjeldahl method, using 5 c.c. of the clear 33⅓ per cent. sputum filtrate, estimating the total nitrogen in grams, and multiplying by 3 (dilution) and by the factor 6.25 to obtain the albumin, and expressing it in percentage.

TABLE 2.—NON-TUBERCULOUS CASES

No.	Diagnosis	Duration	Temperature	Phosphotungstic Acid Ppt. of Alb. Per Cent.	Kjeldahl Est. of Alb. Per Cent.
1	Subacute bronchitis	2 months	Normal	0.3	
2	Chronic bronchitis	5 years	Normal	0.4	
3	Subacute bronchitis and infected bronchial glands	4 weeks	99.5	0.15	
4	Subacute bronchitis	3 weeks	Normal	0.45	1.93
5	Subacute bronchitis	4 weeks	Normal	0.3	1.062
6	Subacute bronchitis	5 weeks	Normal	0.375	8.125
7	Acute bronchitis	3 days	100	0.15	0.50
8	Subacute bronchitis	3 weeks	Normal	0.50	2.60
9	Chronic bronchitis	.....	Normal	0.15	0.80
10	Acute bronchitis	4 days	100-102	0.85	
11	Subacute bronchitis	4 weeks	Normal	0.34	0.85
12	Asthma	3 years	Normal	0.225	1.0625
13	Emphysema	5 years	.....	0.225	1.17
14	Emphysema	.....	Normal	0.10	0.50

COMMENT ON TABLES

From the tabulations it will be seen that albumin was found positive in all cases examined, and while the average quantity was found higher in the tuberculous cases, there was such a wide variation in the quantity in both the tuberculous and non-tuberculous that this could not possibly be used as a diagnostic aid.

It will also be seen that the quantity of albumin in the tuberculous cases seemed to bear no relation to the duration, stage, temperature or number of bacilli present. It might be stated that in those cases in which two precipitation tests were made, the tests were only one and two days apart, yet a wide variation is noted in the result.

In Cases 19 and 29 inclusive, Table 1, and 5 to 14 inclusive, Table 2, the filtrate was also tested for albumin by the Heller test, and by adding a drop or two of potassium ferrocyanid and noting the cloud, with the result that all the non-tuberculous were as positive as the tuberculous, with the exception of Case 19, which was negative to potassium ferrocyanid, but positive to the nitric acid contact test.

In the foregoing observation, albumin was practically always present in sputum, regardless of the disease.

In tuberculous patients, the amount seemed to bear no relation to the stage, duration or activity of the disease process, and it now seems, therefore, that the albumin reaction or the quantitative determination of albumin in the sputum had no practical value in the diagnosis of respiratory affections.

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Preventogram.—"So long as there is a neighbor who cultivates thistles, dandelions, etc., in his fields or lawns, it is well nigh impossible for the careful, industrious neighbor to secure the freedom he pays for by his own care. Parents have a right to insist that their children be not infected by a careless neighbor's children."—Pittsburgh *City's Health*.

INFECTIVE LYMPHOID GROWTHS OF THE LARYNGOPHARYNX, SECONDARY TO SINUS SUPPURATION

A PREVIOUSLY UNDIFFERENTIATED TYPE OF LYMPHOID HYPERPLASIA *

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The present conviction that rheumatoid, cardiac and pyemic diseases emanate from foci of infection often situated in the tonsils, and the occurrence, which I have repeatedly noted, of nasal sinus suppuration, together with secondary infective tonsillitis, and again, with infective hyperplasia of the minor lymphoid groups, render important the evidence which serves to establish the microbic origin of the lymphoid enlargement, and tends to substantiate the sinus disease as the primary source of infection.

Though typical sinus suppuration makes itself obvious, the discharge need not amount to actual pus, the disease being prevalent in attenuated, yet virulent forms, which are readily overlooked.

The particular qualities noted as characterizing infective lymphoid hyperplasia are: a conspicuous enlargement of the smaller clusters and single follicles, an apparently diffused lymphoid infiltration of adjoining tissue, and a decided disposition, in consequence, to redevelopment after excision. In addition to these, recognition of its situation as being in the pathway of a sinus discharge is almost essential to distinction from ordinary follicular hypertrophy.

In the vicinity of the eustachian orifice, a favorite site for this type, it infiltrates the folds and fills the fossae, baffling efforts at eradication and leading to deafness by obstruction of the tube. In the lateral angles of the pharynx, it forms great pale welts which may rival the tonsils in size and even merge with them by overriding the posterior pillars. In the tonsillar region, it brings jointly into prominence adjoining groups of follicles, some in front of the tonsil on the plica, others below its lower pole, giving the tonsil an appearance of having overflowed its bounds. In the tonsil itself, the hyperplasia, if not large, may be obscured by pillar and plica, and unless sinus suppuration be found, an infective tonsillitis may not be distinguishable from that of common retention. Even the suggestive presence of a semipurulent instead of cheesy substance in the crypts, and oversensitive congested or thickened pillars, are not wholly distinctive. Again, though more rarely, as in the second case herewith, the tonsil is the seat of a large and perniciously active hyperplasia which infiltrates and overlaps the usual bounds and which, though benign, has an aspect of semimalignancy. It is not to be inferred that ordinary enlargement of the tonsil is microbic in origin, being neither perniciously active in growth nor disposed to infiltrate or overrun its bounds. Nor does it originate late in life; whereas, the infective lymphoid growths, in both cases herewith, originated after the fifty-fourth year.

In the larynx while, as a rule, it produces only moderate thickening, in rare instances the small folli-

* Read at the thirty-sixth annual congress of the American Laryngological Association, 1914.

cles on the rim of the larynx undergo an immense hyperplasia, developing into tumor-like growths which occupy the space of the laryngopharynx, being heretofore of unknown origin, and only vaguely described under the mistaken[1] term "lymphoma."

It is this tumor-like formation in the laryngopharynx which we have found definitely in two cases, by cultural, microscopic and vaccine methods, to be of microbic origin, having found also the infiltrating type of hyperplasia at the eustachian orifice to partake of the same nature. A fair inference from these findings, considering clinical similarity, points to the hyperplasia at the other sites named as of like infective origin. Leukemia was excluded by the absence of any involvement of the lymphatic glands, and malignancy was negatived by the microscopic test which showed, in

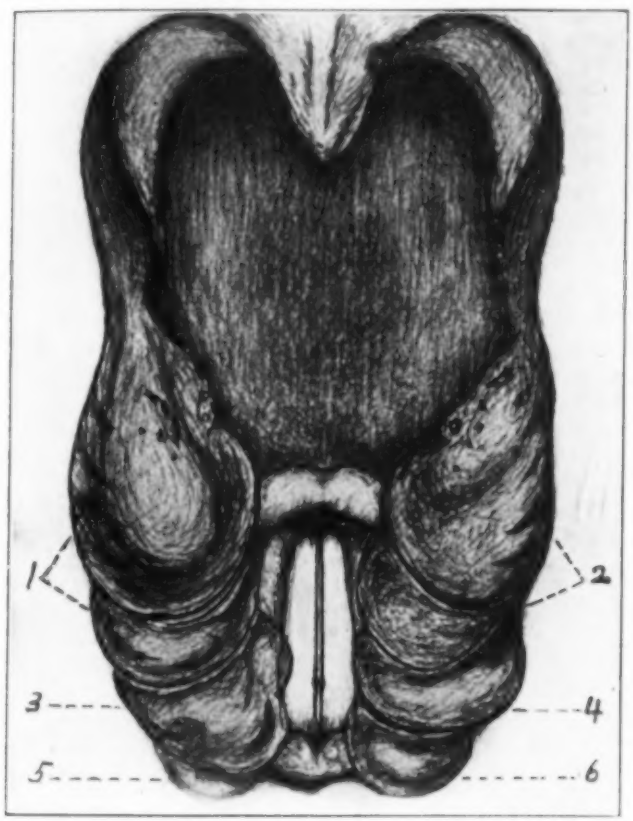


Fig. 1.—Infective lymphoid growths, six in number, appearing as if there were eight, two being bilobular; 1, 2, upper pair, bilobular, attached each to the corresponding pharyngo-epiglottic fold; 3, 4, middle pair, each to the aryepiglottic fold; 5, 6, lower pair, to the arytenoid.

each instance, "a simple hyperplasia of lymphoid tissue similar to that of the tonsils."

CASE 1.—In the laryngopharynx of the first patient there were six separate growths appearing at the surface as eight in number, arrayed four on each side (Fig. 1), the upper two of which were merged in one broad base attached astride the corresponding pharyngo-epiglottic fold, tapering thence upward to the lower pole of the tonsillar fossa. These are designated double upper growths 1 and 2, right and left, respectively, forming the upper pair composed each of two lobes. None of the attachments, however, nor indeed the lower growths, could be discerned until the removal of one or more above. Then the middle pair, appearing third from the top and designated 3 and 4, was found to be attached, each to the corresponding aryepiglottic fold, and the lower pair, 5, quite small, and 6, to the posterior plane of the corresponding arytenoid. These are among the sites specified by Heitler[2] as containing a few lymphoid follicles. Not being visible, the follicles are usually ignored, but evidently they are liable to infection, resulting in hyperplasia which, in minor degree, is not uncommon, and accounts for an

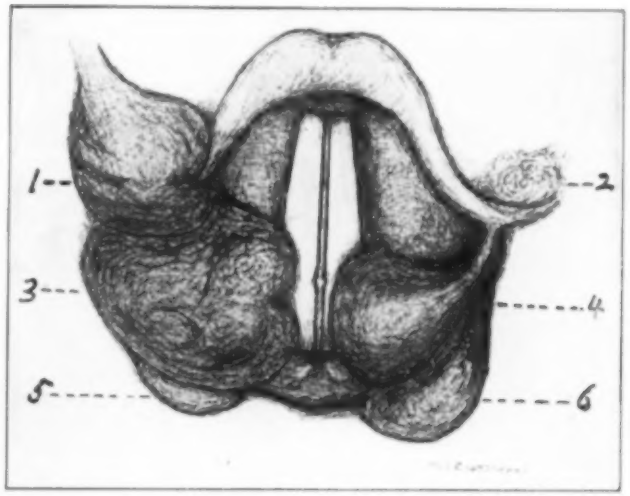


Fig. 2.—After excision of both of the double upper growths; 1, a redevelopment of that on the right; 2, a budding redevelopment on the left; 3, 4, middle pair causing paroxysmal dyspnea; 5, 6, lower pair.

aspect of chronic laryngitis and its accompanying "sinus cough," which, though obstinate before, is found, after the sinus disease is remedied, simply to have disappeared; and which, in major degree, though rare, accounts for the present large overgrowths.

Viewed alone, and considering the total absence of faucial tonsils, which I enucleated years ago, the double upper growths, 1 and 2, by reason of their pyriform contour, smoothly enveloped borders and rudimentary crypt-marked

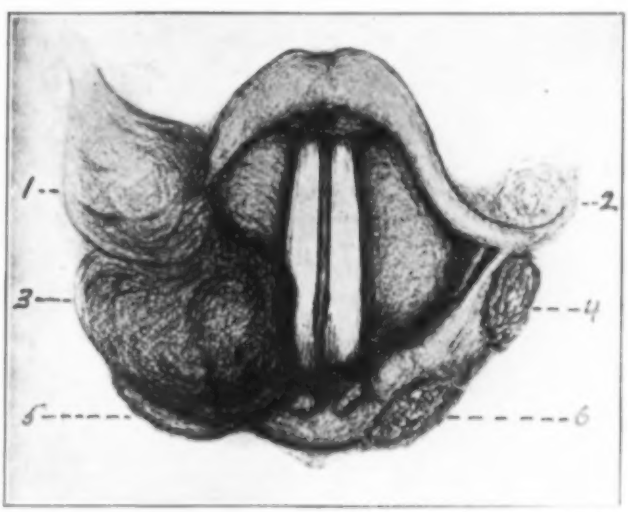


Fig. 3.—At the beginning of autogenous vaccination three weeks after excision of growths 4 and 6, now about to recur; the original growth, 3, never having been excised, and the redevelopment, 1, both growing actively, were well qualified to exhibit the efficacy of the vaccine as portrayed in the following illustrations.

central area, suggested compensatory or aberrant tonsils, such as Rosenberg's[3] "tonsilla succenturiata"; and the striking similarity in structure of the first specimen removed

1. Senn, Nicholas: Pathology and Surgical Treatment of Tumors, Philadelphia, W. B. Saunders, Ed. 2, 1900, pp. 20 et seq.

2. Heitler: Med. Jahrbuch, Vienna, 374; cited by Bosworth, ii, 454.
3. Rosenberg: Mundhohle des Rachens und des Kehlkopfs, Ed. 2, p. 191.

caused the patient, who is himself a well-known physician, to remark that Nature seemed determined that he should have tonsils. But, viewed in their entirety, the theory of compensation became untenable by reason of the improbability that minute lymphoid follicles would, within a period of six months, so late in life as the fifty-fourth year develop without definite cause into overgrowths so unusual in multiplicity, situation and size. Besides, there seemed no end to their development as, three months later, 3, 4 and 6, having grown to impinge on the glottis, the already labored breathing became aggravated by paroxysms of dyspnea, spoken of as "choking spells."

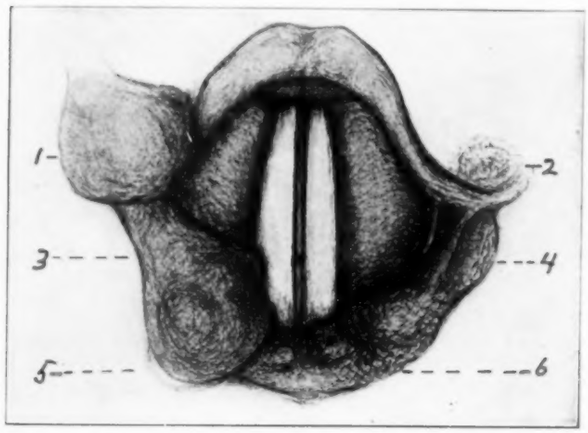


Fig. 4.—Two days after the first administration of vaccine; the original growth, 3, and the redevelopment, 1, already show reduction; the wrinkled surface near the budding redevelopments, 4 and 5, indicates an inner shrinkage so rapid that the mucosa could not keep pace.

The complete surgical removal, in November and December, 1913, by the process of snaring, with upward traction, of both of the upper double growths, amounting to two-thirds of the total volume of growths, abated the dyspnea but little, but did lay bare the mechanism of the paroxysmal attacks, in that the middle pair, 3 and 4, were found to sag toward the glottis, so that any inspiratory effort would draw them closer together across the opening of the larynx, like a pair of folding trap-doors (Fig. 2). The removal late in January, 1913, of one of this pair, 4, on the left, but not its partner, 3, on the right, though also taking 6 from the left, remedied temporarily the difficulty in breathing and afforded an interval during which treatment by Roentgen ray was applied externally to the neck. It had little or no effect, however, inasmuch as a redevelopment of double growth 1, which had already commenced, steadily progressed to the extent of one-third its former size (Fig. 3), a redevelopment of double growth, 2, became manifest, and original growth, 3, which had not been excised, grew even alone, to embarrass the breathing.

It was in face of this discouraging prospect that the report of the bacteriologic examination of the double growth, 2, was received from Dr. E. C. Rosenow, who reported "the presence in the tissue, in large numbers, in almost pure culture, of *Streptococcus haemolyticus;* the predominating presence of the same streptococcus in the associated spheno-ethmoidal sinus discharge; and the presence of the same microbe in the eustachian lymphoid hyperplasia."

Although foreshadowed by the coexistence of the recurrent eustachian hyperplasia, then just coming under our suspicion of being infective, the plain inference from the bacteriologic findings, that the laryngeal growths actually were microbic in origin, presented itself as a pathologic novelty. Aside from the unlike effects of tuberculosis and syphilis, the nearest analogy seemed to be chronic enlargement of true lymphatic glands by pyogenic organisms. Nor did the literature afford any confirmation, as in none of the few cases referred to as lymphoid tumor[4] and lymphoma,[5] or by the non-committal term "polypus," was any cause discovered.

As the need was great, however, a practical confirmation was sought and found by a trial of the autogenous vaccine. Though an initial dose of 50,000,000 was advised, 500,000,000 were taken. The effect was comparable only to that at which one marveled in the early days of diphtheria antitoxin. The change commenced within twelve hours, with relief from irritation, and was marked within two days by visible diminution of the redeveloped growth, 1, and original growth, 3, while the strangely wrinkled aspect of the left aryepiglottic fold (Fig. 4) marked a very rapid reduction of its swollen substance.

The further retrocession under semiweekly doses of 50,000,000 is best told by reference to Figures 5 and 6, showing at biweekly intervals an uninterrupted reduction, which proceeded further, to a practical disappearance of all the growths; and within the year since elapsed they have shown no disposition to return.

Lest an overimpression of the efficacy of the vaccine be conveyed, mention should not be omitted of the limitations found. The infective lymphoid hyperplasia at the eustachian orifice of the same patient, though containing the same micro-organism, but not in pure culture, did not yield to the same vaccine. The great pale welts in the pharyngeal angles yielded little or none, and have since grown still larger at their lower ends, instead of smaller, which refutes any idea of a belated Roentgen-ray effect, nearby, on the laryngeal growths. And the sinus discharge, which had never been more than moderate, and had previously been reduced by surgical drainage, though further diminished by the vaccine, never entirely ceased, and has now resumed its average state.

There were limitations also in the second case, in which, nevertheless, autogenous vaccination filled a similar need. In anticipation of a full report, a brief comparison of salient features will at present suffice.

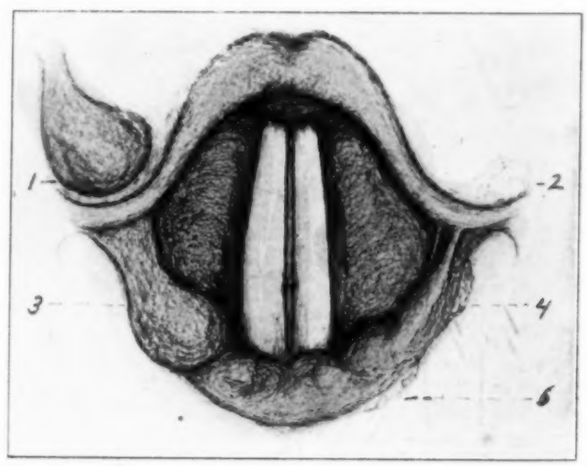


Fig. 5.—At the end of two weeks; conspicuous reduction of growth 3, of redevelopment, 1, and of budding redevelopments, 2, 4 and 6.

Case 2.—Strikingly similar was a lobulated tumor-like lymphoid growth almost equal in size, and corresponding in position, to double growth 1. It showed a like tendency to recurrence after excision, and in the tissue the same *Streptococcus haemolyticus* was found predominating.

4. Mackenzie, John N.: Sec. Laryng. and Otol., A. M. A., 1889; abstr., Jour. Laryng. and Rhinol., 1889, iii, 436.
5. Browne, Lennox: The Throat and Nose, etc., London, Ed. 5, Plate vi, Fig. 48, p. 410; ibid., Plate vi, Fig. 50, p. 416.

The conditions, however, were dissimilar, in that the lingual tonsil was the site of a pair of tumor-like growths; that on the right, after excision, soon showed redevelopment. And the faucial tonsils presented an extreme degree of hyperplasia of the infiltrating type described above, the one on the right after excision also showing redevelopment. The hyperplasia, which had begun only after the sixtieth year,

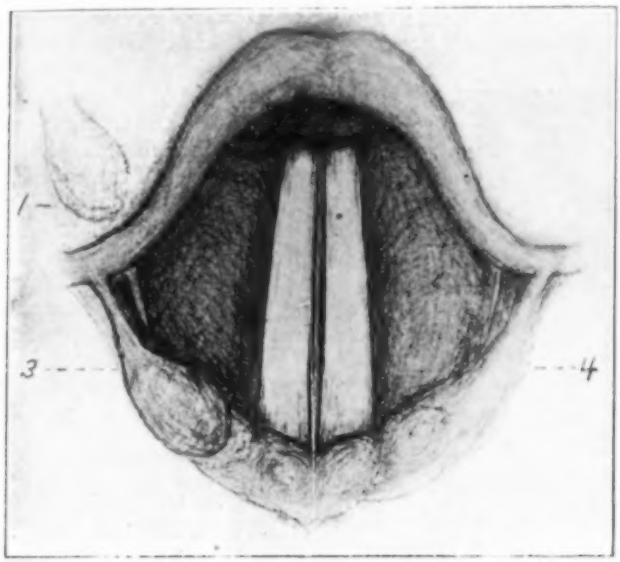


Fig. 6.—At the end of four weeks, only remnants of 1 and 3 were perceptible, and thereafter practically nothing remained.

soon becoming obstructive, was still perniciously active, as shown by recurrences and continued growth when the vaccination was commenced. The dose was not so large, nor the effect so prompt, but all activity soon ceased, the budding redevelopments gradually subsided, and the unoperated growths slowly, although only in part, subsided, the half or so which remained assuming more the phase of ordinary hypertrophy. To emphasize our present point, the vaccine verified the infective nature of the hyperplasia by arresting its infective activity.

In partial explanation of the limitations, the more detailed bacteriologic findings in the first case indicated that a mixed and varying microbic flora presented, at certain sites, difficulties to which the vaccine was not adapted.

To the laryngeal growths, however, it was adapted, and it verified convincingly their microbic origin. To watch these growths, from time to time, threaten the very portal of life, in double array, and then to see them "fold their tents, like the Arabs, and as silently steal away" was a revelation in vaccine therapy, open to no other interpretation.

15 East Washington Street.

Vaccination Against Typhoid in the Italian Army.—This vaccination is not compulsory in the Italian army, but over 7,000 were vaccinated in 1913. The antityphoid vaccine was mixed with antiparatyphoid vaccine and the morbidity after one injection was 4.4 per thousand; after two, only 2.7, and after three injections, 0.3 per thousand, while the non-vaccinated developed typhoid or paratyphoid in 35.3 per thousand, with a mortality of 7.1 per thousand. During the latter part of the year the dosage was reduced and the morbidity varied in different districts from zero to 0.29 per thousand, with no mortality. The chief of the medical staff is now endeavoring to have the vaccination made compulsory throughout the army.

SCIATICA A SYMPTOM OF APPENDICITIS

B. M. RANDOLPH, M.D.
WASHINGTON, D. C.

History.—Mr. B., farmer, aged 48, first consulted me in the summer of 1911. Up to the preceding spring he had enjoyed quite good health. At that time he was taken with an acute illness, which confined him to bed for more than a week, and which was accompanied by fever, and was regarded at the time as an attack of "sciatic rheumatism." Since then his health had been poor. He had lost weight, had dyspepsia, suffered from palpitation, and was unable to work as formerly. He was anxious about himself, and thought he might have heart disease or cancer. A careful study of his case failed to bring out a clear-cut diagnosis. His diet and hygiene were regulated, and he was given a bitter tonic. His condition improved greatly, he regained his normal weight, and was able to do his work quite satisfactorily, though he had to be more careful of himself than formerly.

The patient reported again in the summers of 1912 and 1913, when there were some minor matters to be adjusted. In the winter of 1913-1914 his health and vigor were better than they had been since his first illness.

In June, 1914, he had an acute abdominal attack, which his local physician diagnosed as appendicitis, and advised removal of the appendix. He delayed taking this advice, and when he was able to travel, came to Washington to get my opinion. I advised him to submit to the operation, and on July 2, 1914, appendectomy was done in the George Washington University Hospital by Dr. W. C. Borden.

The appendix was very long and passed from its cecal attachment backward and inward along the inner surface of

Appearance of appendix: *A*, area involved by recent catarrhal inflammation; *B*, normal appendix; *C*, mass of tissue at distal end of appendix, containing pus, and adherent in the region of the upper division of the lumbosacral cord.

the ilium, its distal extremity being situated against the spinal column, just to the inner, median side of the right common iliac artery, and in close proximity to the upper division of the lumbosacral cord. At the tip of the appendix was an adherent mass the size of a hazelnut, which was

ruptured in removal, liberating pus. The odor of the pus pointed to a colon infection.

The wound was drained. The patient was very ill for a few days after the operation, but from then on made satisfactory progress, and was discharged cured, Aug. 12, 1914.

Pathology.—The specimen is a very long appendix. At its proximal portion for a distance of an inch and a half the mucosa is swollen and injected, and presents the ordinary appearance of a catarrhal appendicitis. From this area out to the distal extremity there is no sign of inflammation, either recent or ancient. Indeed, the mucosa is rather paler than normal, and the walls exceptionally thin, as if it had been stretched for a long time. The mass at the extremity of the appendix, when separated from the surrounding adhesions, has a smooth surface, and on section presents the appearance of organized fibrous tissue. On its surface is a whitish-gray area about 1 mm. in diameter. The wall of the pus cavity presents a ragged appearance. The cavity is continuous with the lumen of the appendix. Near the tip of the appendix the mucosa is thickened and indurated.

For the following report and the accompanying photograph I am indebted to Dr. J. B. Briggs, professor of bacteriology and pathology in George Washington University: "The lymph-gland-like structure at the distal end of the appendix, with its eroded interior continuous with the lumen of the appendix, had a strip excised from one side. This section extended from the periphery, or peritoneal border, well into the lumen within the solid mass, and included a small (⅓ mm.) opaque yellowish 'tubercle-like' lesion visible on the external surface.

"Microscopic sections, stained in hematoxylin and eosin, and in van Gieson, showed alike the following characteristics:

"The main mass is composed of smooth muscle, from its arrangement evidently the hypertrophied muscular coat of the appendiceal wall. The exterior, or peritoneal region, showed a fairly loose connective tissue structure, in which many small round cells were embedded, with no particular vascular dilatation and, strangely enough, nothing but a loose accumulation of round cells to account for the well-defined tubercle-like focus seen on the surface by the naked eye. Toward the interior of the mass the zone of tissue bordering on the lumen was composed of a loose etiolated tissue, necrotic at its innermost margin, and loosely infiltrated nearest the muscle with round cells; nearest the lumen with a very few disintegrating pus cells. No necrotic process invading the muscularis was visible. The remains of the mucosa, aside from the etiolated connective tissue, could not be located.

"*Comment.*—The enlargement at the tip of the appendix is evidently the remains of an intra-appendicular abscess of long standing, and the evidently hypertrophic muscular appendicular wall speaks for a long-continued condition of hypertrophic pressure within the appendicular lumen. The relief of this pressure (evidenced by the reestablishment of the lumen of the sac in continuity with the lumen of the appendix), having provided an issue for the pus and inflammatory exudates, has left behind remarkably little trace of the earlier acute infectious inflammatory processes."

Fig. 1.—Papilloma of bladder. Roentgenogram (by Dr. J. S. Derr) after distending the bladder with air.

Fig. 2.—Tumor of bladder after its removal. Actual size 2¼ inches in diameter.

SUMMARY

It seems to me certain that the initial attack of right-sided "sciatic rheumatism," which ushered in this man's illness, was in reality an attack of acute appendicitis, with peripheral pain in the sciatic nerve due to the proximity of the inflammatory focus to its fibers of origin. The case brings home to us that so-called *sciatica* is a symptom, not a disease, and most often the etiologic factor is to be found above the level of the sacrosciatic notch.

The microscopic findings in this case are exceedingly interesting, illustrating in a rare fashion the means by which Nature protects the body against the effects of bacterial invasion.

Twentieth and P Streets, N. W.

SOFT TUMOR OF THE URINARY BLADDER

E. G. BALLENGER, M.D., AND O. F. ELDER, M.D., ATLANTA, GA.

The injection of sterilized air or oxygen into the bladder makes it possible to demonstrate soft tumors of this viscus. While others have directed attention to this fact previously, we believe that the two illustrations shown herewith may not be without interest. In Figure 1 the bladder was filled with air and the roentgenogram taken. Figure 2 is a photograph of the tumor after its removal. The actual diagnosis was first made by cystoscopic examination; we thought of treating it by fulguration. The roentgenogram led us to believe that the size of the tumor indicated its extirpation.

If the growth returns we shall employ the fulguration treatment before it has attained such a large size. The pathologist who examined the specimen reported that it was a benign papilloma.

805 Healey Building.

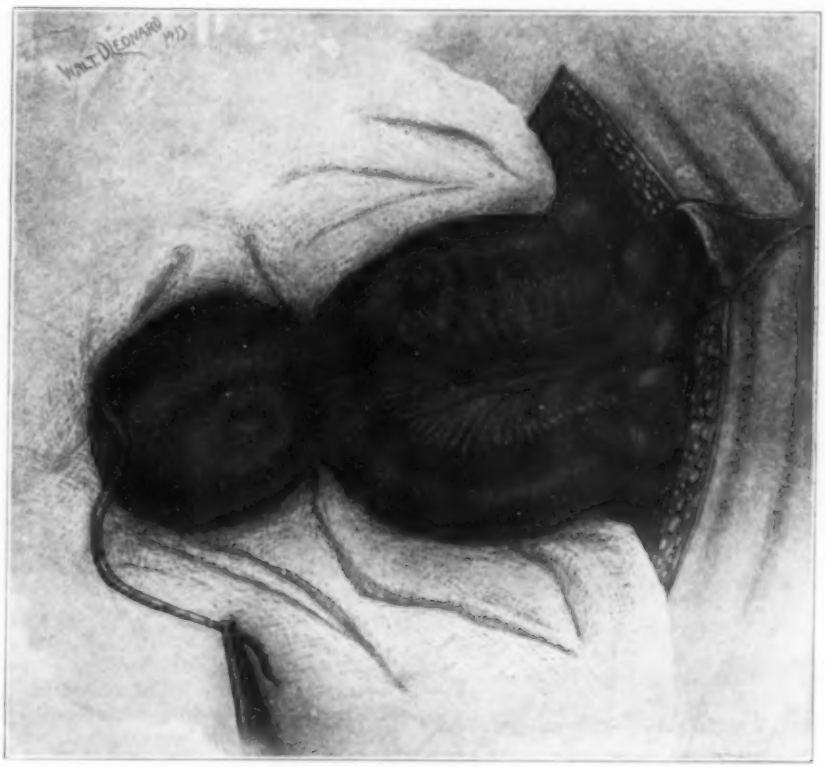
Applications of the Study of History.—History maketh a young man to be old without either wrinkles or gray hair; privileging him with experience of age, without either the infirmities or inconveniences thereof. Yea, it not only maketh things past present, but enableth one to make a rational conjecture of things to come. For this world affordeth no new accidents, but in the same sense when we call it a new moon, which is the old one in another shape; and yet no other than it hath been formerly. Old actions return again furbished over with some new and different circumstances.—Fuller.

A CASE OF OBSTRUCTION OF MECKEL'S DIVERTICULUM

C. M. WATSON, M.D., PITTSBURGH
Surgeon to Presbyterian Hospital

Mr. W., merchant, admitted to the Presbyterian Hospital about noon, November 1, was referred by his physician with a diagnosis of recurrent appendicitis. The following history was obtained from the patient himself: Twenty years ago, when 18, he had an attack of severe cramp-like pain in the lower right quadrant of the abdomen, accompanied and followed by tenderness in this area. He did not vomit. Since then similar attacks have been recurring with increasing frequency. After the first attack he had no more trouble for nearly a year. He has had temperature elevation at times. The trouble has always been preceded by constipation and relieved by bowel movement. The pain and tenderness have always been in the same location, and have never been associated with vomiting. He thinks the latter attacks, although more frequent, have not been so severe as the early ones.

The present trouble began the night of October 30, two days previous to admission, being in no way different from the previous attacks and no more severe. The bowels had moved several times. He had, when I first saw him, no temperature elevation, and his pulse was normal. His expression was one of comfort, which interrogation confirmed. He had been taking liquids and soft diet with no evidence of gastric disturbance. There was no distention but rather marked tenderness over the right lower rectus a little below and to the left of McBurney's point. My diagnosis was in harmony with that of those who had seen him before, with the possibility of enteroliths in the appendix to account for the pain and tenderness without temperature. There seemed no reason for immediate operation, more particularly as he had taken food but a short time before. The leukocyte count at this time was 13,500.



Meckel's diverticulum, with cord-like remains of the remainder of the omphalomesenteric duct.

The following morning, his condition contrasted strongly with that of the previous day. He appeared very ill, and was vomiting frequently small quantities of fluid. Preparation for immediate operation was ordered, and before this could be made, the vomiting became fecal in character, and of considerable quantity.

After thorough lavage, ether was administered and a right rectus incision made. The presenting intestine was distended and deeply congested, while the abdomen contained much free fluid serous in character and slightly stained.

Toward the pelvis a tense band was felt, the weight of much of the distended small bowel resting on it. This was divided between clamps, releasing a loop of ileum fixed low in the abdomen, and which presented at its apex a saccular tumor of about the size of a small orange. This proved to be a Meckel's diverticulum fixed at its distal portion by the cord-like remains of the balance of the mesenteric duct. The sac communicated with the ileum at its anterior aspect near the mesentery.

Four factors entered into the mechanics of the obstruction which was an acute flexion: the weight of the tumor itself; its fixation by the remains of the fetal duct; the conversion of this into traction by the weight of the superimposed intestine, and the rotation about the axis of the bowel due to the point of attachment of the diverticulum.

The diverticulum was removed from the bowel between clamps, and the latter closed in a transverse direction with three rows of sutures. The prolonged traction on the intestine had drawn its walls into a sort of process at the point of attachment, which enabled us to make a strong closure without narrowing the lumen. A tube was placed in the pelvis.

But a small amount of ether was required. Operation was completed in forty-five minutes. The patient's condition for the first forty-eight hours following operation was entirely satisfactory, and in marked contrast to that just previous. There was no further vomiting, nausea or pain. The appearance of comfort and well-being had returned. On the third day, however, the pulse gradually became weaker and more rapid without a corresponding temperature elevation or return of pain or vomiting. Death occurred on the fourth day. No necropsy was obtained. The specimen was globular, about the size of a small orange with an opening communicating with the bowel about half an inch in diameter. Distally it was continuous with the obliterated remains of the balance of the duct. The diverticulum contained three foreign bodies—two dense enteroliths and a piece of wood ¾ inch in length. This man during the previous twenty years had been attended by a number of physicians and always with the diagnosis of appendicitis.

516 Federal Street.

The Practical Man and the Scientist.—Some one has defined the practical man as one who practices the errors of his forefathers. He is tied down to his preconceived opinions, not being enough of a dreamer to get away from them. He will be able to get through the world without receiving many hard knocks; but he will not inaugurate profound changes and advances in human life. That will always be left for the scientist who refuses to be satisfied with what is and who is always seeking a new sort of fact to destroy his own and his contemporaries' equilibrium.—R. D. Carmichael, *Science*.

CHANCRE OF THE FINGER

Andrew J. Gilmour, Ph.B., M.D., New York
Consulting Dermatologist, Manhattan State Hospital; Assistant Attending Dermatologist, New York City Children's Hospital and Schools

J. C., white man, aged 38, single, waiter, a native of Switzerland, Feb. 18, 1912, noticed a swelling just to the inner side of the nail of the right index-finger. This increased in size along the inner side of the terminal phalanx and became so painful that after ten days the patient found it necessary to stop work. March 13, 1912, he visited one of our hospitals and an incision was made. Ten days later a second incision was made and the wound was curetted, at which time the patient says he saw bone. No pus was obtained. Following the incision the swelling became smaller, and on June 7, 1912, it appeared as represented in the accompanying photograph. The condition of the nail is well shown.

Chancre of the Finger.

A photograph taken the same date as the chancre showed a marked papular rash that had been present three weeks.

I have previously seen two cases of chancre of the finger treated by incision before the diagnosis was made.

133 East Fifty-Seventh Street.

Raynaud's Disease in Stone-Cutters Using Pneumatic Tools.—D. E. F., aged 26, married, with good family and personal history, except that he was neurotic, found that frequently and only when cutting stone with a pneumatic tool, the index and middle fingers of his right hand would become white, cold and numb. This instrument, which oscillates from 900 to 1,600 times per minute, transmits strong vibrations to the hand of the operator. The patient told me of a fellow laborer who was similarly affected by using the same kind of tool. Other treatments having failed, I prescribed daily applications of decoction of capsicum. This was done by keeping the fingers for half an hour wrapped in gauze saturated with the decoction. The attacks ceased, apparently as the result of the treatment.—Charles H. Cargile, M.D., Bentonville, Ark.

The Indispensable Animal Factor.—To be a good animal is the first requisite to success in life, and to be a nation of good animals is the first condition to national prosperity.—Herbert Spencer.

New Instruments and Suggestions

A NEW METHOD OF SYRINGE TRANSFUSION

Lester J. Unger, M.D., M.A., New York

Those who have witnessed or performed syringe-cannula transfusions realize the difficulties associated with the procedure. It was to obviate these, and at the same time lose none of the valuable features of the method, that I set out to devise my instrument.

DIFFICULTIES OF THE SYRINGE-CANNULA METHOD

The chief difficulties are: 1. The cannulas are repeatedly handled because (*a*) the syringes are being constantly connected and disconnected, and (*b*) they are pulled on when blood is aspirated, and pushed on when blood or saline is injected. When one considers the amount of handling necessitated in the transfusion of a syringeful, or 20 c.c., of blood, the large number of times the cannulas are jarred is evident. It is in the fact that the cannulas are handled *frequently and directly* that we find the cause of their dislodgment from the vein.

2. The second great difficulty is the risk of clotting. This occurs if the cannulas are not regularly flushed with saline after the withdrawal or injection of blood, or if the procedure is carried out too slowly. Delay will also cause clotting in the syringe before it has been entirely emptied of blood.

3. Two men, equally expert, are necessary. The assistant must be as well acquainted with the method as the operator, since their functions are identical.

The instrument I have devised eliminates the *causes* of the difficulties experienced in the syringe-cannula method. Fundamentally, it is a stop-cock, which alternately connects a syringe for blood to the donor and at the same time a syringe with saline to the recipient; then by turning the cock the syringe with blood is immediately connected to the recipient and the syringe with saline to the donor.

THE INSTRUMENT

A cock which has four outlets constitutes the central part of the instrument. The outlets are designated as follows (Fig. 2): (1) blood outlet (*B*); (2) saline outlet (*S*); (3) recipient's outlet (*R*); (4) donor's outlet (*D*).

1. Blood outlet (*B*). To this, is directly attached a 20 c.c. "Reformed Record" syringe (*Syr*). Through this outlet, by means of the syringe, the blood is aspirated or injected.

2. Saline outlet (*S*). To this is attached a long piece of rubber tubing, the other end of which has connected to it a syringe for saline. The exact length of the tube is immaterial. It should, however, be long enough to get the assistant who is attending to the injection of saline out of the way of the operator. The material of which the tube is made is likewise unimportant, since nothing but saline passes through it. Instead of a plain syringe, a slightly modified Wechselmann salvarsan apparatus may be used. The latter, by means of two ball valves, allows of the ready filling and emptying of the syringe, and eliminates the necessity of disconnecting it.

3 and 4. Recipient's and donor's outlet (*R* and *D*). To each of these is connected a paraffined rubber tube, 1¾ inches long, which has attached to its other end a metal connecting piece. This, in turn, fits the recipient's and donor's cannula. The tubing is a piece of catheter (No. 15 French) which is paraffined according to the method described by Dr. G. E. Brewer. They are sterilized, and then for a few seconds immersed in boiling paraffin. The tube is then shaken in the air in order to distribute the paraffin equally, to get rid of the excess, and to hasten hardening.

The cock is so arranged that the central stopper (*C S*) can be rotated only through an arc of 45 degrees. This range of rotation allows of three possible positions, in two of which two simultaneous circuits exist; in the third no circuit whatever is present. Naming the positions according to the flow of blood and the circuits according to the outlets they connect, we have:

1. Donor's position (Fig. 2) establishing, (*a*) donor blood circuit, and (*b*) recipient saline circuit.

2. Recipient's position (Fig. 3) establishing (*a*) recipient blood circuit, and (*b*) donor saline circuit.

3. Intermediate position, establishing no circuit—all outlets are shut off.

1. Donor's position (Fig. 2). If the cock be turned toward the donor as far as it will go, the instrument will be in the donor's position. A channel (donor blood circuit) between the donor's vein and the Record syringe is established for the aspiration of blood. At the same time, another channel

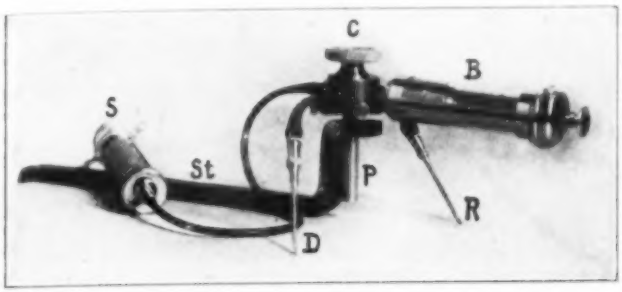


Fig. 1.—Instrument for syringe transfusion: *C*, stop-cock; *B*, blood syringe connected to blood outlet; *S*, saline syringe connected to saline outlet; *D*, donor's cannula connected to donor's outlet; *R*, recipient's cannula connected to recipient's outlet; *St*, stand; *P*, pedestal by which the stop-cock is raised or rotated.

(recipient saline circuit) exists, through which saline is injected into the recipient's cannula in order to insure its patency.

2. Recipient's position (Fig. 3). If the cock be turned toward the recipient as far as it will go, the instrument will be in the recipient's position. Here again, two channels exist, one through which the blood is injected into the recipient (recipient blood circuit), and one (donor saline circuit) which connects the donor with the saline syringe so that this circuit can be kept patent.

It is this *immediate and continued* flushing with saline of that part of the system through which blood is not passing that insures freedom from clotting.

3. Intermediate position. If the cock be turned midway between the donor's and recipient's positions, the instrument is in the intermediate position, and all the outlets are closed off.

The instrument is supported by a stand, which is merely a mechanical device to hold the cock stationary and to permit of its adjustment to various heights in conformity with the levels of the veins.

TECHNIC

After having firmly fixed the stand to the table, the cock, with the tubing attached to the donor's and recipient's outlets, is fastened to the stand. The saline apparatus, from which all air has been forced out, is connected to the saline outlet. The cock is put in the donor's position (Fig. 2), and here also the air is forced out by means of saline. By raising, lowering, or rotating the pedestal, to which the instrument is attached, and by proper placing of the arms, connections to the cannulas can be made without difficulty.

Into the recipient's vein is inserted a large cannula, which is then connected to the recipient's outlet. Since the cock is in the donor's position, saline can be slowly injected into the recipient, thereby insuring the patency of this cannula. Into the donor's vein is inserted a cannula which is now attached to the donor's outlet. It is important to insert the cannula so that it points toward the donor's hand rather than the tourniquet. Blood immediately runs out of the blood outlet, forcing the air ahead of it. Into this outlet, a Record syringe is placed and blood aspirated. When the syringe is filled, the cock is turned into the recipient position (Fig. 3), and the blood injected. Since the assistant is always very slowly injecting saline, he is now flushing the circuit which was used in getting the blood into the syringe. As soon as the 20 c.c. of blood have been injected, the cock is turned back to the donor's position, and the syringe refilled. This is continued until the desired amount of blood has been transfused. The syringe need not be changed after each injection, but may be refilled until it begins to work with difficulty. Before the syringe is disconnected, the cock should be turned to the intermediate position so that there is no loss of blood.

After connections have been made to the cannulas: 1. The operator (*a*) aspirates and injects blood, (*b*) changes the syringe when necessary and (*c*) turns the cock back and forth. 2. The assistant merely slowly forces saline out of his syringe. 3. The nurse cleans the Record syringes as fast as they are used, and places a clean one in easy reach of the operator.

EXPERIMENTAL WORK

I have repeatedly transfused dogs and have found the instrument to work admirably. The first tests were simply artery-to-vein transfusions of about 300 c.c. of blood. In the second group of experiments much larger amounts were transfused. In order to obtain a greater quantity of blood, so that the amount would at least equal that of the usual human transfusion, the following procedure was carried out: After a primary artery-to-vein transfusion, which was arbitrarily set at about 300 c.c., a secondary one, in which the original recipient was made the donor, was immediately performed. In this way, the original recipient was able to furnish not only part of his own blood, but also that received. By this method, as much as 700 c.c. were transfused at one time. By adding a tertiary transfusion, a total amount of 1,460 c.c. was passed through the instrument in an experiment. Finally, vein-to-vein transfusions were done. Here also primary transfusions were resorted to in order to increase the amount of blood obtainable. In all the experiments, I was limited only by the amount of blood the dogs could furnish. At the end of each experiment, the circuits were tested with saline and found to be patent.

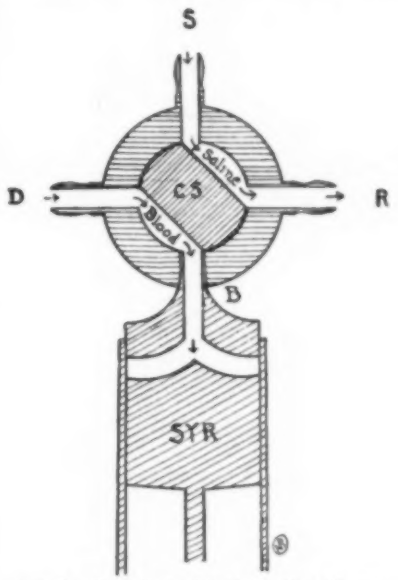


Fig. 2.—Donor's position: *D*, donor's outlet; *B*, blood outlet; *Syr.*, blood syringe. Blood passes from donor's vein through *D*, out at *B* into *Syr.* *S*, saline outlet; *R*, recipient's outlet. Saline is forced from saline syringe through *S*, out at *R*, into recipient's vein. Channel between *D* and *B*, donor blood circuit; that between *S* and *R*, recipient saline circuit. *CS*, central stopper (rotates through an arc of 45 degrees).

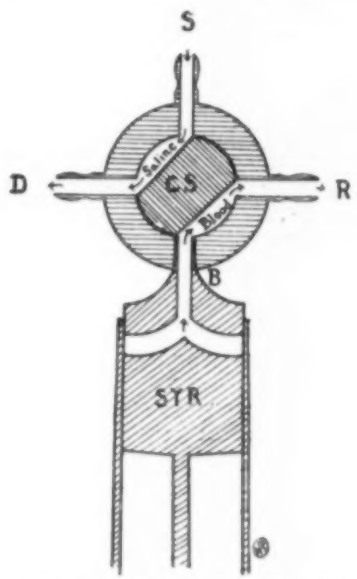


Fig. 3.—Recipient's position: *Syr.*, blood syringe; *B*, blood outlet; *R*, recipient's outlet. Blood is forced out of *Syr.* through *B*, out at *R*, into recipient's vein. *S*, saline outlet; *D*, donor's outlet. Saline is forced from saline syringe through *S* out at *D* into donor's vein. Channel between *B* and *R*, recipient blood circuit; that between *S* and *D*, donor saline circuit. *CS*, central stopper.

This method will be applied to man as soon as opportunities present themselves.

ADVANTAGES OF THIS METHOD

The instrument I have described overcomes the difficulties experienced with the syringe-cannula method, by striking at their causes.

1. The frequent handling of the cannulas is eliminated because connections are made not directly to them but to the cock. For this reason the cannulas ought not to be dislodged.

2. Clotting is avoided because the entire system is regularly and instantly flushed with saline, and the length of time the blood is outside of the body is reduced to a minimum. In none of the animal experiments did clotting occur.

3. Only the operator handles the blood syringe. The function of the assistant is limited to the injection of saline.

4. Fewer syringes are needed. In one experiment, 800 c.c. of blood were transfused, only two syringes being used. It is advisable, however, to have about four to meet emergencies.

5. It is time-saving because it reduces the manipulations; it minimizes the time the blood is outside of the body, and it allows of the injection of saline simultaneously with the aspiration or injection of blood. When indicated, a more rapid transfusion can be done by this than by any other method. The rate of the flow can, however, be varied at will. Blood can be sent across as slowly as one wishes, because the patency of the circuits can be relied on.

I wish to express my thanks to Dr. F. S. Mandlebaum, who so generously afforded me the privileges of the pathology laboratory of the hospital, and to Drs. Shapiro, Rosenthal and E. Mayer, who were of great assistance in the animal experimentation.

Mount Sinai Hospital.

A DEVICE FOR HOLDING SOLUTION BOTTLES IN OPERATING ROOMS*

DONALD C. BALFOUR, M.D., ROCHESTER, MINN.

Each bottle shown in the accompanying photographs has as its feature a combination handle and corking device which can easily be detached from the bottle and sterilized. The chief advantage, therefore, is that the handle being sterile, the surgeon or assistant may readily obtain more iodin before or during an operation without the soiling of gloves. To those using the benzin, iodin and alcohol method of skin preparation, for which the apparatus is especially adapted, other points of advantage are quite obvious, for instance, evaporation is prevented (the handle being equipped with a spring), solutions are not wasted, bottles are not broken, and time and trouble are saved the operating room personnel.

Fig. 1.—Method of attaching stoppers.

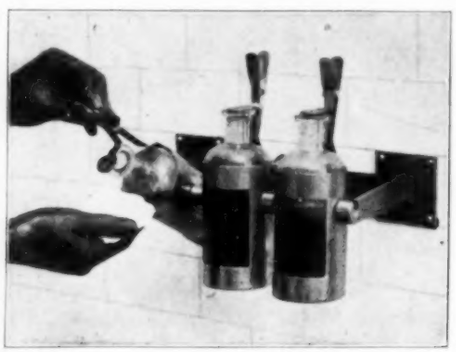


Fig. 2.—Stoppers in place and bottles in use.

* From the Mayo Clinic.

LABORATORY SUGGESTIONS

CLYDE L. CUMMER, M.D., AND RICHARD DEXTER, M.D., CLEVELAND

EQUIPMENT FOR SEROLOGIC WORK

In performing serologic work, certain technical methods may be evolved which will be economical of both time and labor. Each worker will naturally adapt his equipment to his own needs. We have made certain adaptations which may prove useful to others.

Removing Cotton Stoppers from Pipets.—The plugging of pipet mouth-pieces with cotton is desirable in order to avoid drawing fluid into the mouth and to prevent saliva from running into the pipet. The removal of these cotton plugs is often bothersome, especially when many pipets are used and have to be cleaned.

Apparatus for recording differential counts.

Our laboratory assistant solved the question by suggesting the use of a dentist's broach. With this fiendish instrument most of us are painfully familiar. It is merely a bit of highly tempered fine wire, roughened so that it grips whatever it touches, and is mounted in a metal handle. With it, the bits of cotton can be removed from fifty pipets in a few minutes.

Apparatus for the Inactivation of Serum.—The inactivation of specimens of blood-serum by use of heat at 56 C. (132.8 F.) is performed much more satisfactorily in a water-bath than in a dry oven. The maintenance, however, of an unprotected water-bath at 56 C. for as short a time as half an hour is not easy, even when the equipment includes a thermoregulator. We have found that the following adaptation saved much annoyance:

A so-called small "physician's incubator" (Bausch and Lomb Company) was secured which is built in the form of a cylinder, with the opening at the top. It is provided with a water-jacket of an ample capacity. A round basin, 3 inches high and of circumference to fit in the incubator, was made and provided with handles to facilitate lifting it in and out. A number of small cans were secured and holes were punched in the bottoms and sides so that the water would circulate freely when they were lifted.

The large basin is brought to proper temperature outside the incubator, the small cans containing the specimen-tubes being lifted up and down to allow the water to mix freely. When the temperature is uniform throughout the bath and at the proper point, the bath is placed inside the incubator. This is prepared in advance by filling the water-jacket with hot water, between 60 and 70 C. (140 and 158 F.). We find that if the inner bath is at the correct temperature, the exact temperature of the water in the surrounding incubator does not matter greatly as long as it is hot enough to act as an insulator and prevent heat loss. The temperature of the

surrounding jacket may be kept between 55 and 65 C. (131 and 149 F.) during the day with a simple Bunsen flame.

With this apparatus, from forty to forty-five specimens may be inactivated at one time, if need be. Our experience has been that the temperature in the central enclosed bath remains constant for from thirty to sixty minutes without any attention whatever, and so proves somewhat of a labor-saving device. The cost of the apparatus is inconsiderable.

APPARATUS FOR RECORDING DIFFERENTIAL COUNTS

For use in making differential blood counts we have improvised a contrivance of a small wooden box made to hold upright four counting machines, on which may be recorded the number of the most prevalent types of leukocytes. The forms occurring in smaller proportions can be remembered without being recorded. With this scheme, it is not necessary to use the eyes for recording, and the total of each class is in plain view at any time.

LABORATORY BURNER

A tin can with diameter less than 3 inches is used. In the bottom three or four circular holes are made for air intakes. A microburner is placed inside the can and the rubber tubing is carried out through one of the openings. Slides to be stained may be placed across the top and the stain may be allowed to simmer. The can serves both as a support for the slide and as a shield against air-currents in case the burner is used in front of an open window.

Rose Building.

A PROCEDURE MINIMIZING THE DIFFICULTIES OF TRANSPLANTATIONS OF A GONOCOCCUS CULTURE

A. P. OHLMACHER, M.D., DETROIT

One who handles gonococcus cultures is familiar with the uncertain viability of the organism. To safeguard a culture, the ordinary practice is to grow it on ascites-agar and to transplant at intervals of twenty-four to forty-eight hours. Outside of large laboratories, with a corps of special assistants, this becomes burdensome and expensive.

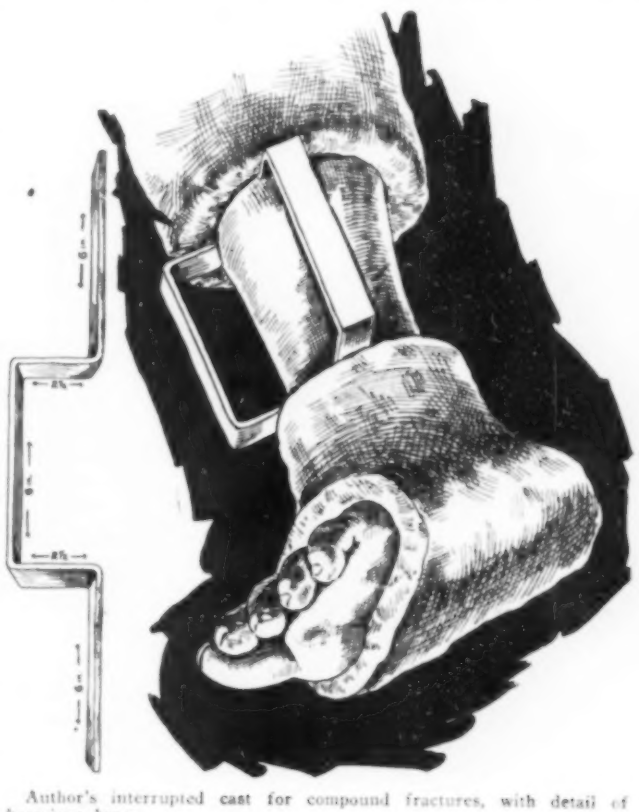
About nine years ago, while inoculating a horse to produce antigonococcic serum, and while handling numerous gonococcus cultures, I hit on a method of reducing the frequency of subcultures. By its use I found it possible to increase the interval between transplantations from seven to fourteen days, or even longer, using a solid culture medium as a substratum. The details are as follows:

Löffler's blood serum mixture of the usual formula, with bouillon neutralized according to the prevailing standard, constitutes the culture medium. It has happened in my work that horse's serum (the vehicle generally employed in commercial biologic laboratories) formed the basis, though the blood serum of cattle probably would answer equally well. It is preferable to have the test-tube slant of Löffler's medium with its original condensation water. If perchance this condensation water is lost, it may be replaced by the requisite amount of ordinary bouillon (standard neutralization). The transplantation, after one or more subcultures on ascites-agar, is effected by the platinum loop, sowing directly into the pool of condensation water, or bouillon replacing the condensation water; but not, as by the usual custom, of rubbing the inseminated loop over the surface of the slant. With its condensation water thus impregnated, the tube of Löffler's medium is capped to prevent evaporation, and without undue agitation set in the incubator. After a period generally not more than forty-eight hours, it will be found that a transparent, glistening, colorless line of culture appears above the condensation water, and by a process resembling the "creeping of salts" in strong saline solutions, it will be seen that this line of culture slowly but steadily ascends the surface of the slant, continuing for seven, ten, fourteen or even more days. From this mounting line of culture, further transplantations may be effected at a convenient interval, the length of which may be ascertained for a given gonococcus strain after a few experiments.

INTERRUPTED CAST FOR COMPOUND FRACTURES

F. P. CORRIGAN, M.D., CLEVELAND
Associate Surgeon, St. Alexis Hospital

An infected compound fracture presents to us a problem difficult in its nature. The presence of pus demands, above all, frequent dressings after complete drainage has been established. If the dressings are not changed frequently, the wound remains bathed in pus. The phagocytic cells of the freshly-exuding lymph are constantly battling against odds and their energies wasted. The value of frequent dressings can not be over-emphasized; in fact, our aim should be the maintenance, if possible, of a pus-free wound. On the other hand, firm union of the fragments demands well-secured, correct apposition. This would seem to interdict frequent changes of dressings with the movements involved. This objection is real if the ordinary splints applicable to simple fractures are used. No matter how carefully handled, each



Author's interrupted cast for compound fractures, with detail of hoop-iron brace.

loosening and readjustment of splints endangers the apposition. A further objection is that each change of dressings necessitates the presence of the surgeon at the bedside.

Coincident with the increased speed in transportation and modern machinery has come a rapid increase in the number of this class of cases. The problem of maintaining absolute cleanliness and correct apposition must be solved. Malunion or no union, bone necrosis, even sacrificed limbs, are the dire results of unsuccessful treatment.

In my own work I have found the device here presented indispensable in handling cases of this class. The illustration is for the common fracture of the lower leg but the idea can be modified for other situations. It consists simply of a plaster cast built in two sections. The two sections are joined into a rigid unit by three metals bent in the shape illustrated and embedded equidistant from each other in the sections of plaster. These metals may be strips of brass, iron or steel (I have used all three). By using three strips, sufficient rigidity is obtained if they are ⅛ inch thick and ¾

inch wide. This permits the use of ordinary hoop-iron or strap-iron, which is obtainable anywhere.

The dimensions given are tentative only, but are correct for a medium-sized man; they will be altered as the judgment of the attending surgeon dictates.

The advantage secured is ready accessibility without disturbance of apposition.

The dressings can be changed by the nurse as often as desired.

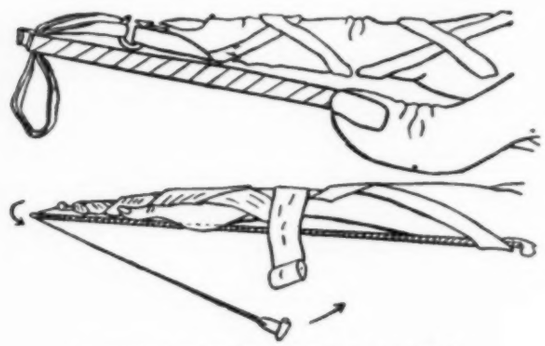
The presence of the doctor to readjust splints is not necessary.

St. Alexis Hospital.

CONVENIENT SPLINT FOR FRACTURE OF METACARPALS

CHARLES AUER, M.D., NEW YORK

In fracture of the hand distal to the carpals, it not infrequently happens that deformity tends to recur, especially in a fat or swollen hand, in spite of the rubber tubing and splints ordinarily used to retain the fragments, unless the latter are pressed so tightly as to cause severe pain or even necrosis in the already injured tissues. In old fractures and ununited fractures in which the injury has been overlooked and there is great deformity and callus formation, strong and continuous traction is obviously indicated to bring the parts into a line as nearly anatomic as the fibrous union will permit, and of holding it there immovably.



Convenient splint for fracture of metacarpals.

I have found the splint as illustrated satisfactory in a series of cases, including one so-called Bennett's fracture of the thumb, one compound fracture in a man weighing over 300 pounds, and several old ununited fractures with deformity.

This dressing exerts traction of any degree desired (being adjustable by changing the location of the safety-pin or by using two rubber bands instead of one) for almost any period of time without becoming disarranged or requiring much attention. It may also be applied to more than one finger.

The upper diagram shows the spiral arrangement of the adhesive bands to the finger and to a bent wire nail. Two bands of adhesive applied the same way should be used instead of the one as illustrated to give proper strength. A relaxed rubber band is shown slipped over the bent nail and lying in a nick at the end of the splint.

In the lower diagram the hand and finger have been bandaged up to the wrist and the wooden splint, which is broad at the arm and hand and narrow at the finger, applied and held by one broad band of adhesive placed as illustrated. The bandage then should be continued *including* the splint, and the adhesive tag carrying the free end of the rubber band pinned to the outside of the completed bandage as indicated by the arrow.

2009 Madison Avenue.

Special Article

PRACTICAL PHARMACOLOGY *

(*Continued from page 512*)

VI

B. DEPRESSANTS. 4. OF THE CENTRAL NERVOUS SYSTEM — MORPHIN GROUP — (Continued)

THERAPEUTIC USES

The celebrated remark attributed to Sydenham, that few physicians would be so callous as to practice medicine without opium, suggests the variety of conditions in which the opiates are used.

Morphin stands first among drugs for the relief of pain. It often gives relief when used in doses which have hardly any other perceptible effect, but intense pain may require the use of the largest doses. Neuralgia affords one of the few examples of conditions in which other drugs are to be preferred to morphin as analgesics.

There are comparatively few conditions in which morphin is indicated as a simple hypnotic, since we now have a series of drugs better adapted for this purpose, but sleep may be afforded by relieving pain which prevented it.

Morphin is useful to prevent cough when this is not attended with free expectoration and is of sufficient frequency to prove distressing, or when it interferes with sleep. When bronchial secretion is free the cough is necessary to remove it, and interference with the cough at this time results in the accumulation of fluid in the air passages, making the patient's ultimate condition worse.

Morphin and opium are used as diaphoretics, especially in the form of Dover's powder, in which the dilatation of the skin vessels by morphin promotes the diaphoretic action of the ipecac. Morphin allays restlessness, and this is very commonly utilized in the treatment of inaccessible hemorrhage.

Opium acts locally to diminish intestinal peristalsis, and this action is utilized in a variety of conditions, many of which do not require enumeration. Opium in peritonitis serves the double purpose of relieving pain and restlessness and of immobilizing the intestine. It is useful in checking the excessive peristalsis in diarrhea.

Morphin is frequently used previous to general anesthesia to allay the nervous apprehension of the patient and to secure sleep. It also acts synergetically to chloroform and ether, less of which is required for general anesthesia after morphin than without it. The synergistic action of chloroform and morphin on the respiratory center appears to be a source of danger in their combined use. The depression of the respiratory center prevents, to a certain extent, excessive respiration accompanying variations in the depth of anesthesia. Accidental death from too rapid administration of ether is not common, with dogs, at least, after morphin; in fact, it is sometimes impossible to kill dogs by the ordinary administration of ether when they have previously received large doses of morphin.

Codein is now largely prepared synthetically from morphin, and is obtained in a purer form than it was

* This is the sixth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

formerly. Codein and ethyl morphin hydrochlorid are much less active than morphin, which they resemble otherwise. Codein is said to be only about one-tenth to one-twentieth as active as morphin, and while this may be true so far as the narcotic action is concerned, it is not used therapeutically in doses twenty times as large as those of morphin.

Its analgesic action is so slight as to make it much less valuable than morphin, but it does dull pain to some extent, and the probable absence of euphoria, which leads to the habit with morphin, is a distinct advantage of codein. It is said to have an especial value for the relief of abdominal and pelvic pain.

The actions of ethyl morphin hydrochlorid on the central nervous system are very similar to those of codein, and in addition it is irritant to the mucous membrane of the conjunctiva, this action being utilized in the treatment of conjunctivitis, iritis and corneal opacity, but it sometimes causes acute edema of the conjunctiva from local vasodilatation.

Ethyl morphin hydrochlorid has been exploited to some extent as an analgesic and sedative but there is no satisfactory evidence that it is equal to morphin for these purposes.

Diacetyl-morphin (heroin) differs from morphin to a greater degree than codein and dionin. Diacetyl-morphin and its action in lessening cough have been known for many years, but it was not used therapeutically until Dreser investigated it in 1898, and stated that it decreased the reflex excitability of the respiratory center toward painful stimuli, such as those which induce cough, more than it does toward carbon dioxid, the normal stimulant of the center. He also stated that it slows the rate of respiration while the depth and force of the individual respirations are increased, and he suggested that the increased force of the respirations would be of value in the treatment of bronchitis, in which the air-passages are narrowed.

Dreser experimented with rabbits, but it has been shown that his results do not apply to the use of heroin on man, and Cushny has shown recently that heroin influences the respiration exactly as morphin does; it has, therefore, no evident advantage over the older drug in the treatment of cough.

Diacetyl-morphin is much more toxic than morphin and must be used in correspondingly smaller doses. It gives rise to the habit quite as readily as morphin does, and the habit is as difficult to break and fully as injurious.

Diacetyl-morphin is said to be less actively narcotic in proportion to its activity on the respiratory center, and it is also less actively analgesic than morphin; its use should be limited, therefore, to the relief of cough, if, indeed, it were not better to use morphin or codein in these cases also.

Indian cannabis is usually classified with the morphin group, but its action is feeble compared to that of opium, and its effects are so uncertain that it is probable that there is no condition in which opium or morphin does not deserve the preference.

It is sometimes asserted that the Indian hemp of the Orient is more active than that grown in America, but a specimen grown near Philadelphia was found to be nearly twice as active as a fairly good specimen of the imported. Indian cannabis is often called hashish, but the hashish of Persia is a mixture, of which hemp is a constituent.

It is commonly stated that the resin represents the active constituents of Indian hemp, but the intensity of the physiologic action on dogs and the content of resin do not run parallel.

Cannabinol, prepared from hemp, produces hallucinations, lassitude and a desire to sleep.

Extract of Indian cannabis is a constituent of the extensively advertised proprietary hypnotic Bromidia, and it is probable that the continued belief in the value of Indian cannabis as a hypnotic is due in no small measure to its exploitation in this preparation.

It is sometimes used as a hypnotic, but it is impossible to give any nearer indication for its special field of usefulness.

DOSAGE

Morphin sulphate is analgesic in doses of from 3 to 15 mg. ($\frac{1}{20}$ to $\frac{1}{4}$ grain), the smaller doses lessening or abolishing mild pain, (such as may interfere with sleep) and intense pain requiring the larger dose. Even this may require repetition before relief is afforded, but it is preferable to use an insufficient dose and repeat it in half an hour, rather than run the danger of giving too large a dose at once.

The dose used for the relief of cough varies widely, dependent on whether it is desired to lessen the frequency of a troublesome cough without interfering with its removal of the secretion, or to abolish a severe irritative "dry" cough, which interferes with sleep. The former will require from 1 to 2 mg. ($\frac{1}{60}$ to $\frac{1}{30}$ grain) and the latter will require somewhat larger doses and more frequent repetition. Eight mg. ($\frac{1}{8}$ grain) of morphin or 0.06 gm. (1 grain) of opium in the form of Dover's powder is used for its diaphoretic effect. A single dose taken on retiring is a popular treatment for "colds." When morphin is used just prior to general anesthesia, the dose is from 8 to 16 mg. ($\frac{1}{8}$ to $\frac{1}{4}$ grain), and when used some hours previously to secure sleep and allay apprehension, the larger dose will be required usually, or the smaller dose may be used and repeated when the effect begins to pass off.

The aim with all narcotic drugs should be to secure the desired action with the absolute minimum of the drug, and it is always best to give a small dose when there is any doubt concerning the amount which will be required and repeat it if necessary.

Codein and its salts are given in doses of 0.03 gm. ($\frac{1}{2}$ grain) or more, this dose corresponding to approximately 0.003 gm. ($\frac{1}{20}$ grain) of morphin. Its use can be long continued without much fear of giving rise to the habit.

Half the dose may be used and repeated with correspondingly greater frequency when desired.

The average dose of diacetyl-morphin, or heroin hydrochlorid, is 3 mg. ($\frac{1}{20}$ grain). Its use should not be long continued because of its extreme tendency to induce the habit.

The average dose of extract of cannabis indica is stated to be 0.01 gm. ($\frac{1}{5}$ grain) and of the tincture 0.5 c.c. (8 minims), but there is no obvious indication for their use.

MATERIA MEDICA *

Morphin, an alkaloid obtained from opium, is the chief therapeutic constituent of the drug.

In medical literature the term "morphin" is habitually used indiscriminately for the alkaloid and its salts, but the prescriber should not write "morphin" when the sulphate, or other salt, is desired. Morphin

* Owing to lack of space the materia medica of morphin, opium and cannabis indica has been largely omitted. It will be included when this series is published in book form.

and its salts occur in commerce as colorless or white crystals or as a crystalline powder, odorless, and having a bitter taste. The dose of the several products is comparable and from a practical point of view the only important difference to note is their solubility in water and in alcohol.

MORPHIN AND SCOPOLAMIN

Some years ago Schneiderlin, a surgeon connected with an institution for the insane, administered morphin and scopolamin to a patient in the institution for the purpose of diminishing the amount of general anesthetic necessary for a major surgical operation, and was surprised to find that he was able to remove a cancerous breast without administering chloroform or ether to induce general anesthesia.

After performing a small number of operations in which morphin and scopolamin were employed in this way, he suggested the use of the combination as a substitute for general anesthetics, or to render more than a few drops of the latter unnecessary for surgical operations.

Schneiderlin seems to have been under a misapprehension concerning the degree to which morphin and scopolamin are antagonistic, and to have supposed that they were synergistic only in their narcotic effects, for he placed much stress on the importance of the antagonisms in their side actions. In truth, the antagonisms between morphin and scopolamin are of minor importance, but they have an extraordinary degree of synergistic action on the respiratory center, sometimes causing paralysis in minute doses of the combination.

The morphin-scopolamin narcosis was tried by many surgeons, but the fatalities following its use were so numerous that it was abandoned by the great majority of operators, but it has been exploited in a sensational manner both in Europe and in the United States as a preliminary to childbirth. Effective doses are not very dangerous to the mother, in the hands of those who have mastered the difficult technic of its use, but labor is frequently prolonged by its use and the death-rate among the new-born from asphyxia is certainly higher than with other methods in the hands of the general practitioner.

Under no circumstances should the single dose exceed 0.01 gm. (⅙ grain) of morphin and 0.5 mg. (1/125 grain) scopolamin, nor should this be repeated until the effects have passed (several hours). The combination is strongly contra-indicated outside of special institutions, and except in the hands of those who are trained in its use.

Morphin and scopolamin do not produce total insensibility to pain when used in doses which are safe, but they induce a peculiar condition — the so-called "twilight sleep" — in which everything is quickly forgotten, so that the mother has no recollection of anything that happened during labor.

An American manufacturer combines an extract of cactus, known as cactoid, with scopolamin (or hyoscin), claiming that the danger to the heart is overcome thereby; but it has been shown by several investigators that cactus and all its preparations are inert; hence such combination can have no advantage over the simpler one. Another manufacturer has sought to avoid the decomposition of scopolamin, to which the injurious action is attributed, by the addition of an alcohol, but this is of no practical advantage.

Various combinations of opium alkaloids under trade names, including Omnopon, Pantopium and Narcophin, have been introduced with the claim that they have all the advantages of morphin without the side actions, but independent observers have not found the expensive substitutes preferable to morphin.

(*To be continued*)

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 513*)

XIX

Diphtheria

This disease was long thought to be due to filth, because, like all sore throats, etc., it seemed to be more prevalent in dirty, damp, and crowded places. This is true only because it is not so readily eradicated from such surroundings, more cases are not discovered, and more carriers are found in such localities. Many sore throats were termed diphtheritic when they were septic, or cases of tonsillitis with membrane, or were really scarlatinal cases. Also, membranous croup was long held to be distinct from diphtheria. With the discovery of the contagium of diphtheria, the Klebs-Loeffler bacillus, it is now conceded not only that the discovery of this germ in the secretions of the throat, nose, or other parts of the body proves that diphtheria is present, but also that its absence is proof that the disease is not present, provided that the swab is properly taken and the culture made by an expert. Also, it has now long been proved that membranous croup is laryngeal diphtheria.

This throat inflammation, now termed diphtheria, has been known for centuries, having first appeared in the East and later in Europe, occurring mostly in epidemics. Now it is endemic in most civilized cities, although small epidemics, localized in certain buildings, public institutions, tenements, or schoolhouses, frequently occur. A carrier of this disease may communicate it to persons so widely separated as to make the occurrence of the disease almost unexplainable by any epidemic theory. While nearly all mankind is susceptible to small-pox, and a large majority to scarlet fever, many persons seem naturally immune to diphtheria. Also, a closer contact is apparently needed with an infected individual than in these other diseases.

As one attack of diphtheria does not cause immunity from the disease for any great length of time, and as preventive measures do not protect for any great length of time, it is difficult to eradicate this disease. Small-pox could doubtless be prevented entirely in any country in which every individual was vaccinated at least two or three times during his life. Such prevention of diphtheria cannot be expected; but a more rigid quarantine of diphtheria patients, and a greater effort made to discover carriers and isolate and treat them will render diphtheria less and less frequent.

This disease has always had a large percentage of deaths; but the death rate since the introduction of antitoxin has been constantly on the decrease, and with a better understanding of the proper dosage of antitoxin, and with the effort made to diagnose the disease early, the death rate will be more rapidly decreased. Our best sanitarians believe that for every case of diphtheria recognized, at least one sore throat that car-

ries the Klebs-Loeffler bacillus escapes; in other words, there is an equal number of missed mild cases.

It has been shown that patients with diphtheria when coughing, or even talking, will throw diphtheria bacilli into the air, and if such are deposited on culture plates not far from the patient, diphtheria bacilli will grow. It has also been shown that the Klebs-Loeffler bacillus lives longer where it is cold and damp than where it is dry and hot. The disease is more prevalent in cold weather, and the germ does not die so readily and become non-infectious in cold, damp rooms. Besides every care to prevent the spread of infection from the patient, the bedroom should be kept warmer in cold weather than with most diseases, not only because of the foregoing fact, but also because the toxins of diphtheria bacilli are depressing, and the patient's temperature is often too low.

It has been shown that the normal hydrochloric acid in the stomach inhibits or kills the diphtheria bacilli; therefore it is exceedingly rare to find these germs in the intestines, and very rare to find diphtheritic membrane in the stomach.

In the majority of cases the tonsils, one or both, are the parts affected in diphtheria, and with the present methods of treatment, in a large portion of these cases the membrane will be limited to these regions. The soft palate is next most frequently attacked, the pharynx next, and nasal diphtheria, with proper care taken, is not very frequent. Laryngeal diphtheria is not a frequent complication to tonsillar diphtheria; it generally begins as the original point of attack.

CARRIERS

These may be convalescents from diphtheria, or may be those who have had contact with diphtheritic patients who may or may not later develop the disease, or the term may be perhaps more properly limited to those who carry the germ for months. Diphtheria germs may live a long time on books or other substances, handled, coughed, sneezed or expectorated on by a diphtheria patient, and may infect persons coming in close contact with such infected material. This method of infection may not be very frequent. Animals may carry the infection. It is doubtless a good axiom to believe that a tonsillitis with exudate is diphtheria until it is proved not to contain the Klebs-Loeffler bacillus. Such a patient should be more or less rigidly isolated, as streptococcic infection is, if anything, more readily communicated than is a diphtheria infection. Therefore, there can be no excuse for not isolating a sore throat with exudate or membrane as soon as such a case is discovered.

The subject of carriers and the length of time which the Klebs-Loeffler bacillus may remain in the throat may be studied by reference to the article of Henry Albert[1] and that of Henry Page.[2] Both of these papers give many references and quote many authorities. Albert quotes Ledingham as stating that 50 per cent. of persons affected with diphtheria have lost the bacilli by the time the local membrane has disappeared. The average length of time that the bacilli will persist in a throat is thirty days, as shown by a very careful clinical and bacteriologic study of a diphtheria epidemic by Jessie W. Fisher.[3] She found that these germs could persist for more than 100 days, and in one instance 111 days. Not every bacillus carrier shows virulent germs, but in a large proportion of such bacilli carriers the germs are virulent; therefore a bacillus carrier should always be considered able to infect others. Even if such bacilli are proved not to be fatal to guinea-pigs, they might be able to infect a human being. Dr. Fisher also discovered that a sewer could become contaminated with diphtheria bacilli, that rats living or eating refuse in this sewer could become infected, and that cats catching or eating the rats could become carriers. Cats associating with a diphtheritic patient may frequently become carriers.

Klein[4] thought that cows could become infected and could cause infection of milk, which, unboiled, could infect an individual. Infected milk certainly can cause streptococcic throats, and it would seem likely could cause diphtheria. Probably a pet dog could carry the disease as readily as a cat. Therefore the rule and regulation of every physician should be that cats and dogs should be excluded from the sickroom of a patient with any kind of sore throat; and if other cases occur in a family in which quarantine is properly carried out, not only should the throats of all persons be examined, but also the cat or dog should be suspected.

The location of the Klebs-Loeffler bacillus in carriers who are convalescing is probably most frequently in the throat, though the bacillus may be found in the nose. In those who carry these germs long they are more likely to be found in the nose. Therefore, swabs should be taken of both regions. It is quite probable that a surface swab from a tonsil may be negative while a culture obtained from probing into crypts of the tonsils or in the region back of the tonsil might show the presence of the germ. It is culpable neglect to fail to examine a patient thoroughly to ascertain if he is free from the Klebs-Loeffler bacillus.

The boards of health vary as to the number of negative cultures that will release a patient from quarantine. The safest number is perhaps four negative cultures, two from the throat and tonsils, one from crypts or back of the tonsil, and one from the nose, taken on alternate days, at a considerable interval from the use of any antiseptic washes, gargles or sprays. This would seem to prove that a patient was free from the Klebs-Loeffler bacillus. In instances in which epidemics of diphtheria have occurred and cultures have been taken from the throats of a large number of well persons in the same institution, it has almost invariably been shown that a certain small percentage of such persons have acquired the germ and are carrying it without becoming actively infected.

TREATMENT OF CARRIERS

Various methods of ridding a carrier of the diphtheria germ have been tried. Local measures vary, and may comprise painting the suspected regions with tincture of iodin or with Lugol's solution, with silver solutions, phenol solutions, or the use of various gargles, hydrogen peroxid solutions, etc., and the nasal inhalation of various thymol or iodin inhalants or sprays. There is no question that whatever else is done, some local antiseptic should be applied. Diphtheria antitoxin injection has not been very successful. Local applications in the mouth, throat or nose of antidiphtheritic serum have not been proved to be very successful. Vaccinations with dead diphtheria bacilli have been only partially successful. These

1. Albert, Henry: The Treatment of Diphtheria Carriers, THE JOURNAL A. M. A., Sept. 27, 1913, p. 1027.
2. Page, Henry: Diphtheria Bacillus Carriers, Arch. Int. Med., January, 1914, p. 16.
3. Fisher, Jessie W.: A Diphtheria Epidemic, THE JOURNAL A. M. A., Feb. 6, 1909, p. 439.
4. Klein: Local Gov. Board Rep., London, 1899, xxix.

various methods are described by Albert.[1] He believes that a local application to suspicious crypts of the tonsils of a "5 per cent. solution of silver nitrate will destroy all bacteria with which it comes in contact." A thorough application of a 10 per cent. solution of silver nitrate he finds will cause some destruction of the epithelium of a crypt and a fibroblastic proliferation with ultimate obliteration of the lumen, which is of course the object desired.

The most successful treatment of diphtheria carriers seems to be that of spraying the nose and throat with pure cultures of *Staphylococcus pyogenes aureus*. According to the reports, this spray is apparently harmless to the individual. This method was first used by Schiøtz, in 1909. Although it is not always efficient, in some instances it has removed the Klebs-Loeffler bacillus and prevented its growth so that cultures were negative to it in a week or less. It has not proved very successful in nasal cases. Discussions of this treatment are given by Catlin, Scott and Day,[5] Lorenz and Ravenel,[6] and Rolleston.[7] On the other hand, Womer,[8] after using this staphylococcus spray in forty-two cases of diphtheria carriers, comes to the conclusion that although it is harmless, it does not appreciably lessen the period of quarantine. This leaves the value of this treatment still subject to positive proof. It may certainly be tried.

Womer states that "apparently most of the carriers do not spread the disease after sixty days from the day the disease begins." The word "most" leaves this assertion doubtful as far as general practice is concerned. Any one person who carries the disease may be one that could infect others.

Wood[9] thinks that in one or two instances, in diphtheria, spraying the affected areas with live lactic acid bacilli hastened the disappearance of the diphtheritic germ. Antiseptics should not immediately be used in the throat after such spraying, as he thinks it is the live bacilli that act perniciously on the diphtheria bacillus. This suggestion is worthy of further investigation.

Miller[10] recommends that diphtheria carriers have their throats sprayed with warm formaldehyd solutions every three or four hours during the daytime. The strength which he recommends to begin with is 0.25 or 0.5 per cent. in water of a 40 per cent. formaldehyd solution. [The official Liquor Formaldehydi is a 37 per cent. solution.] This solution may be increased in strength to 1 per cent. if deemed advisable. He found that in from three to six days the diphtheria bacilli disappear from the throats of carriers thus treated. He urges that the solution be prepared fresh each day. He did not find that the kidneys were irritated by such treatment.

IMMUNITY

While it has been long known that infants and many adults seem not to be susceptible to diphtheria, it has only lately been shown that probably a large proportion of adults, stated at 90 per cent., perhaps 50 per cent. of children, and perhaps 80 per cent. of newborn infants have diphtheria antitoxin in their blood and are not likely to become ill with diphtheria. It should be noted, however, that individuals protected against self-infection may be carriers of diphtheria bacilli which can infect others. How many of these immune adults or older children have been always immune, and how many have acquired immunity by contact with diphtheria germs, is not known. Nurses and physicians who frequently care for diphtheria patients have been shown to have antitoxin in their blood, though they may never have had the disease.

A skin test has been devised, known as the Schick reaction, to determine whether or not an individual is protected against diphtheria, that is, whether he has diphtheria antitoxin in his blood. The reaction seems very positive, and distinctly shows whether an individual is artificially protected or has natural antitoxin against this disease. The test is made with a dilute diphtheria toxin of such strength that 0.1 c.c. contains one-fiftieth of the minimum fatal dose for a guinea-pig. This amount, namely, 0.1 c.c., is injected into the layers of the skin, perhaps best on the inner surface of the arm. A positive reaction should appear in from twenty-four to forty-eight hours, and is evidenced by a slight swelling and localized redness, a reddened papule which remains from seven to ten days. When this papule disappears, the skin over it may desquamate slightly, and pigmentation may remain for days and even weeks. Park states that the injection is best given with a small hypodermic syringe with a platinum point needle, that the injection must be into the skin and not subcutaneously, and that immediately after the injection there should be a raised whitish spot, which in twenty-four hours becomes bluish, with a slight edema. Schick's interpretation of the positive reaction, as just described, is that the patient has no antitoxin in his blood, or at least less than 1/30 unit of antitoxin in 1 c.c. of blood. He declares that all persons so reacting are susceptible to diphtheria, and Park agrees with him. Park,[11] in his summary on immunity in diphtheria, states that according to Hahn the interval between the injection of vaccine and the development of antitoxin is not less than three weeks, while other investigators think that it may be eight days. Persons who have a natural antitoxin show an earlier increased antitoxin production. Von Behring considers that 0.01 unit of antitoxin per 1 c.c. of blood is sufficient to protect a healthy individual, and much less may protect against diphtheria.

Park states that last year in the Willard Parker Hospital one-fourth of the inmates were diphtheria carriers, and he found that "active immunization produced a very decided increase of antitoxin in a relatively short time in all persons who had natural antitoxin." Park found that 400 out of 700 scarlet fever patients showed natural immunity by the Schick reaction; that is, 57 per cent. were immune. He comes to the conclusion that persons positively exposed to diphtheria should be passively immunized even if the toxin-antitoxin injections have been given; but he urges that the Schick test will prevent the necessity of immunizing about two-thirds of such exposed persons. In other words, a person suspected of being exposed to diphtheria should receive the Schick test. If this is positive, showing that he is susceptible, he may be passively immunized with antitoxin. If he has not been immediately, but is likely to be, exposed and

5. Catlin, S. R.; Scott, L. O., and Day, D. W.: Successful Use of the Staphylococcus Spray on Diphtheria Carriers, THE JOURNAL A. M. A., Oct. 28, 1911, p. 1452.

6. Lorenz, W. F., and Ravenel, M. P.: The Treatment of Diphtheria Carriers by Overriding with Staphylococcus Aureus, THE JOURNAL A. M. A., Aug. 31, 1912, p. 690.

7. Rolleston: Brit. Jour. Child. Dis., July, 1913.

8. Womer, W. A.: Results of Staphylococcus Spray Treatment in Forty-Two Cases of Diphtheria Carriers, THE JOURNAL A. M. A., Dec. 27, 1913, p. 2293.

9. Wood, Harold B.: Lactic-Acid Bacillus Spray for Diphtheria, THE JOURNAL A. M. A., Aug. 9, 1913, p. 392.

10. Miller: Med. Rec., New York, July 25, 1914.

11. Park, W. H.; Zingher, A., and Serota, M. H.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, THE JOURNAL A. M. A., Sept. 5, 1914, p. 859.

should be protected, he may be actively immunized with a vaccine. Such active immunization Park believes will last only from one to two years; hence general protection of large numbers of individuals against this disease cannot yet be urged. Park quotes Bauer as finding that the persistence of the bacilli in carriers is not shortened by active immunization.

The toxin-antitoxin injections used by Park are described in his article. The von Behring vaccine[12] "consists of a mixture of strong diphtheria toxin and antitoxin in such proportions that the toxin is just neutralized or is in very slight excess when tested on a guinea-pig." These injections are given intracutaneously, and immunity occurs in about ten days. Individuals with natural antitoxin in the blood may be more susceptible to reaction from this toxin-antitoxin vaccine than those without such antitoxin, and individuals who have antitoxin in their blood from previous infection may show a hypersensitiveness to the injection.

As just stated, patients so actively immunized are apparently protected for at least one year, while a patient who receives an immunizing dose of antitoxin is protected for perhaps not more than ten days. However, this antitoxin immunization is rapid and will generally protect a patient from one exposure to this germ.

Veeder[12] carefully reviews the literature on the subject of this vaccination, and finds that there is a marked variability of reaction to such injections, and quotes Kissling as believing that the injection should be made into the back instead of the arm, and that more dilute injections should be given, and if a milder one causes considerable reaction, a stronger one should not be used. If the milder one causes no reaction, a strong injection may be given. A "negative phase" has not been discovered; a patient who has been vaccinated with toxin-antitoxin, on subsequent exposure to diphtheria may receive antitoxin without showing hypersensitiveness. It has been shown that diphtheria carriers have more antitoxin in their blood than is found in the blood of patients who have just recovered from an attack of the disease.[13]

Von Behring[14] believed that the dose of toxin-antitoxin injected can be gaged accurately according to the weight of the individual. This he has worked out on animals.

The future advantage of this kind of protection against diphtheria lies in the fact that a foreign serum like horse serum need not be used in a patient who is a hay fever or asthma subject. It is quite probable that it would be unwise, at least at the present time, to use this toxin-antitoxin in diseased or damaged individuals, as those with a weak or diseased heart. At least, this precaution is suggested. It may later be shown that a dose so small as to give practically no reaction may still be sufficient to immunize. It is reported by Schreiber[15] that in vaccination by von Behring's method of 700 schoolchildren and 300 children in a hospital, there have been no untoward effects.

Immunizing doses of antitoxin to persons who have been exposed to diphtheria, given early, are generally successful in preventing the development of the disease. The immunizing dose for a child should probably be at least 1,000 units. Doubtless adults should receive larger doses. In the epidemic reported by Dr. Fisher, of the large number of immunizing doses given, but one person, a nurse, subsequently developed an attack of diphtheria during the period of observation. She had a mild attack at the end of two weeks. Dr. Fisher believes that two weeks is the limit of protection from a dose of immunizing antitoxin.

In the epidemic which occurred at Johns Hopkins Hospital, in 1911, Dr. Ford[15] reports that of 300 prophylactic doses of antitoxin administered, in most cases the reaction was limited to a slight urticaria. In a few instances there was some local edema, tenderness, and elevation of temperature. In five cases there were characteristic symptoms of serum disease, and in one of these cases there was typical anaphylactic shock. The patient who developed shock had previously received antitoxin, and had a history of asthma. It would have been interesting to note if all the other individuals who received the antitoxin had never been subject to asthma or hay fever: whether this shocked individual was the only one who had a history of asthma.

(To be continued)

12. Veeder, B. S.: Active Immunization Against Diphtheria by Means of von Behring's Vaccine, and the Diphtheria Toxin Skin Reactions, Am. Jour. Dis. Child., August, 1914, p. 154.
13. Otto: Deutsch. med. Wchnschr., March 12, 1914, p. 542.
14. Zangemeister and von Behring, Deutsch. med. Wchnschr., May 22, 1913.
15. Schreiber: Therap. d. Gegenw., 1914, lv, No. 3.

15. Johns Hopkins Hosp. Bull., October, 1911, p. 357.

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THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

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SATURDAY, FEBRUARY 13, 1915

LIVER FUNCTION AS INFLUENCED BY DUCTLESS GLANDS

Much has been written of late in regard to the interrelations of the ductless glands. Most of the suggestions advanced are purely hypothetic and serve merely to permit the formulation of definite questions in regard to the possible part played by the internal secretions. The thyroid, pancreas and suprarenal bodies, for example, have been alleged to influence each other in a complex manner, so that either failure or overactivity on the part of any one member of this group might affect the organism by the attendant alteration in the functions of the remaining allied ductless glands. The situation has been further complicated by the assumption that the action exerted by these individual glandular organs may be in the nature both of inhibition and of stimulation.

However vague these ideas may seem, and however much they are unfounded in the actual facts of experience, they embody a new point of view. We are asked to consider whether the deficiency of a specific internal secretion may not affect the organism by an indirect effect which its failure induces in other glandular functions as well as by the direct result of the suppression of its own immediate activities. To cite an illustrative possibility, if it were demonstrated that the thyroid exerts an inhibitory effect on the pancreas or a stimulating influence on the adrenals, then the failure of thyroid function might manifest itself not only in the direct consequences of hypothyroidism, but also in an unrestrained overactivity of the pancreas in the one case or a diminished efficiency of the unstimulated adrenals in the other.

There is a dearth of reliable facts regarding these suggested glandular interrelations. The questions involved are rendered extremely complicated and difficult to solve in the face of so many simultaneously occurring variables. Recent researches from the Hunterian Laboratory of Experimental Pathology at the Johns Hopkins Medical School[1] throw some light in this field. Whipple and his collaborators have shown that valuable information concerning liver function and liver disease can be obtained by the intravenous injection of a solution of phenoltetrachlorphthalein. The drug is excreted through the bile by the activity of the hepatic epithelium and may be extracted from the feces and estimated with considerable accuracy.[2] Under various conditions in which the functional capacity of the liver cells is interfered with, the output of phenoltetrachlorphthalein falls below normal, depending on the extent of the derangement. For example, in passive congestion of the liver there will be periods of decreased output corresponding to the intensity of the stasis or breaks in cardiac activity. When the portal blood is shunted around the liver by an Eck fistula, a distinct depression in the phenoltetrachlorphthalein output is noted as soon as liver atrophy and fatty degeneration set in. With an acute fatal poisoning and a definite liver injury produced by such toxic agents as chloroform and phosphorus, the output in the bile will usually be proportional to the amount of hepatic damage produced and may be completely suppressed.

Inasmuch as it is thus found that definite and known functional derangement of the liver is associated with a definite change in the excretion of phenoltetrachlorphthalein, it seems permissible to assume in turn that a decrease in the phenoltetrachlorphthalein output means a decrease in the functional capacity of the liver. From this point of view the Johns Hopkins pathologists have studied the liver function in the pathologic states brought about by removal of various ductless glands. After complete extirpation of the pancreas there is a steady fall in phenoltetrachlorphthalein excretion which speaks strongly for the idea that pancreatic activity is essential to proper liver function. The same is the case with the adrenals. These facts have a bearing on the theories of diabetes.

Thyroid insufficiency is without apparent effect on the functions here considered. Parathyroid insufficiency with tetany causes no decrease in phenoltetrachlorphthalein output and may even increase the readiness with which it is excreted. The tetany may cause hyperactivity on the part of the liver cells. Hypophysis extirpation produces varying results. Reverting to our opening remarks, therefore, these interesting new experimental studies supply evidence to the effect that the liver is very much concerned in the derangement that follows the removal of the ductless glands. Hence it is not at all improbable, in the opinion of Whipple and Christman, that this disturbance may be an important factor in the general symptom complex of ductless gland insufficiency.

1. Whipple, G. H., and Christman, P. W.: Liver Function as Influenced by the Ductless Glands, Jour. Exper. Med., 1914, xx, 297.

2. Whipple, G. H.; Mason, V. R., and Peightal, T. C.: Bull. Johns Hopkins Hosp., 1913, xxiv, 207. Whipple, G. H.; Peightal, T. C., and Clark, A. H.: Ibid., 1913, xxiv, 343.

ENDAMEBAS AND PUS POCKETS ABOUT THE TEETH

The recent articles of Barrett,[1] Smith,[2] Bass and Johns,[3] Evans,[4] Middleton and others on the presence of endamebas in pus pockets about the roots of teeth, the relationship of these to other lesions and the use of emetin in treatment, emphasize again the need of cooperation between physician and dentist and better knowledge by each of the field of the other. The dentist has not usually been trained to recognize or appreciate the danger of these chronic suppurations to the general health, and the physician, including perhaps the bacteriologist, has not made a sufficiently close study of the tissues involved in these suppurations to enable him to draw proper conclusions, especially with reference to the complete cure of such cases under the most favorable treatment imaginable. For example, Bass and Johns state that the periosteum of the alveolus is "continuous with that of the surface of the jaw bone, but it also continues up and covers the neck of the tooth." This statement might lead to the belief that the root of the tooth is covered with a periosteum similar to that of bone and subject to the same physiologic and pathologic changes. Such is not the case.

It seems desirable to call attention to the peculiar characteristics of the outer hard tissue of the tooth root—the cementum—since a knowledge of the physiologic functions of this tissue in connection with the changes which take place, as a result of suppuration, presents the key for prognosis. The dentin, which forms the bulk of the root of the tooth, is covered with a layer of cementum, which corresponds in many respects to bone. The periosteum which lines the bone of the alveolar socket and the cementum covering the root are connected by many bundles of fibers of the peridental membrane, the ends of which are embedded in the periosteum and the cementum, respectively. The function of these fibers is to hold the tooth in position and cushion it against the force of mastication. Lying on the surface of the cementum between the ends of these fibers is a layer of cementoblasts, which correspond to the osteoblasts lying on the surface of the periosteum; and their functions are similar. The important difference between the two tissues is that the cementum does not have a blood supply corresponding to that in bone, nor does it have haversian systems.

If we do not fully appreciate this difference, we might naturally expect the same response and the same processes of repair in cementum which occur in bone as a result of periosteal inflammations. If the periosteum is stripped from bone, the bone may become necrosed, in which case the activity of the cells within the bone will separate the necrosed area and exfoliate it. Similar changes cannot take place in the cementum because of the lack of circulation of blood. When the peridental membrane is stripped from the cementum by suppuration, the cementum becomes a dead tissue which cannot be exfoliated, except in its entirety by the removal of the tooth. It is sufficiently porous to become saturated with the products of suppuration, and remains as a constant irritant to the overlying tissue. Therefore, there is established in each of these pockets a condition similar to that caused by a piece of necrosed bone continuously held in position.

All of the investing tissues of the teeth—the peridental membrane with its specialized cells and fibers, and the bone of the alveolar process—must be considered as tooth appendages, since they develop with the tooth and always disappear subsequently to its extraction. Likewise, whenever there is a suppurative detachment of the peridental membrane from the cementum, the fibers of the peridental membrane and the alveolar process corresponding to the area of detachment are absorbed, as has been shown by microscopic examination of the overlying tissue. A careful study of the tissues involved in these chronic suppurations will show that the suppurative process first attacks the tissue at the very surface of the root and strips it off, no soft tissue whatever remaining attached. The involvement of the tissue along the immediate root surface is always in advance of the involvement of the tissue farther removed from the root, and the bone of the alveolar process at any particular level disappears last, apparently by absorption rather than as a direct result of suppuration. This disease should, therefore, be considered a pericementitis, rather than an alveolitis. The bone of the alveolus is practically never laid bare by this disease, but is covered by the soft tissue membrane, which presents a granulating surface to the root. A "gum boil" or a sinus discharging through the gum seldom occurs; generally these result from abscesses occurring at the apex of the root of a tooth following the death of the pulp.

On account of the foregoing conditions, the word "cure" should be used with caution. Evidently some of those who have been studying these cases have considered them "cured" when no more endamebas were demonstrable, apparently without considering the tissue changes and conditions which prevent the closure of the pocket. A case should not be considered cured, when there remains the constant irritant—the denuded cementum—which maintains the harbor for a reinfection. This fact—that such treatment does not result in permanent cure—seems already partially recognized in the present report of Bass and Johns,[5] as they

1. Barrett, M. T.: Preliminary Report, Dental Cosmos, 1914, lvi, 948.

2. Smith, A. J.; Middleton, W. S., and Barrett, M. T.: The Tonsils as a Habitat of Oral Endamebas, THE JOURNAL A. M. A., Nov. 14, 1914, p. 1746.

3. Bass, C. C., and Johns, F. M.: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.

4. Evans, J. S., and Middleton, W. S.: Endamebic Pyorrhea and Its Complications, THE JOURNAL A. M. A., Jan. 30, 1915, p. 422.

5. Bass, C. C., and Johns, F. M.: Pyorrhea Dentalis and Alveolaris, THE JOURNAL, this issue, p. 553.

state that reinfection has occurred in about 12 per cent. of cases within four weeks.

It is also stated that a previous injury or inflammation seems necessary "to furnish a kind of a pocket" in order to provide a nidus for the endamebas, and that they "are not known to live on open surfaces." These statements should impress on both dentist and physician the possibilities of greater watchfulness of the gingivae and more careful management of operative procedures to prevent the injury which prepares the pocket for the endamebas. The pus pocket is always preceded by a gingivitis which may be so insidious as scarcely to attract the patient's attention. Most cases may be cured by very simple procedures, if undertaken previous to the detachment of the tissue from the root.

NYSTAGMUS AND VERTIGO

Vertigo and involuntary eye movements are two symptoms whose significance is frequently puzzling to the clinician. The frequency with which they are associated with disturbances of the internal ear suggests that this peripheral sense organ and its nerve offer an experimental basis of attack on the problems.

Wilson and Pike[1] have recently reviewed this subject, and have given a brief résumé of the experimental work they have carried on for several years.

The labyrinth of the ear is a definitely located sense organ supplied by the vestibular branch of the eighth cranial nerve whose function is to give information of change in position of the head, and whose destruction causes important and often lasting alterations in the posture of the animal. Impulses arising in it become effective only after they have reached a central mechanism and have there been transformed and sent out as efferent or motor impulses. Through its central connections there is more close association with the oculomotor muscles than with the skeletal muscles generally. Our conception of our position or change of position in space is due in large measure to the fusion of afferent impulses from the labyrinth and from the retinal and muscular apparatus of the eyes. The lack of agreement of the impulses from these different sources is one cause of vertigo.

Normal stimulation of the labyrinth comes from movements of the head. Despite the general acceptance by physiologists of Mach's view that actual fluid currents in such minute tubes as the semicircular canals are unthinkable, the hypothesis of the stimulation of their ampullary nerve endings by fluid currents has had a wide following among clinicians. This has led to a lack of appreciation of the rôle of pressure in the usual stimulation of the labyrinth, and of the significance of pressure on the central vestibular tract in intracranial disturbances.

Much confusion has existed also with reference to nystagmus. Wilson and Pike have endeavored to clear up this situation by pointing out that, although involuntary oscillatory movements of the eyes may arise from various experimental intracranial or other lesions, the labyrinthine type of nystagmus, consisting of alternate slow movements in one direction and quick in the opposite, is not encountered in any other experimental lesion which does not involve the vestibular tract. These papers furnish additional evidence that "if there is anything definite to say in regard to labyrinthine nystagmus it is that the cause of the slow deviation lies in the labyrinth or the vestibular tract," and that the quick return is a cerebral act indicating disturbance in the oculomotor rather than in the labyrinthine or vestibular mechanism.

A change in the position of the head in space is commonly, but not invariably, associated with a change in position of the eyes. Stimulation of the labyrinth of unusual violence always brings about a change in the position of the eyes unless there is some oculomotor deficiency, and usually also gives rise to a disharmony of the impulses from the eye and ear and other parts of the body. Impulses of ordinary intensity are harmonized or integrated and give rise to a definite orderly motor response which results in the restoration or maintenance of equilibrium. Disharmony of these various afferent impulses is attended by an incoordinated motor response—the objective sign of vertigo. Both the normal motor response and the incoordinated motor response are reflex responses.

From the time of Flourens in 1828, numerous investigators have worked on the labyrinth. Prior to Flourens, Purkinje studied rotation vertigo and laid the foundation for its laws. Later came Hitzig, who studied electrical stimulation and harmonized galvanic vertigo with rotation vertigo. Hitzig, Goltz and Bornhardt noted stimulation of the labyrinth with heat and cold, but it remained for Bárány to show the importance of the caloric test in clinical practice. As a result of these experimental investigations, the fundamental phenomena which accompany stimulation of the labyrinth became well known to physiologists. But it remained to explain which were essentially labyrinthine. Bartels and Wilson and Pike have furnished experimental evidence which leaves little doubt that the slow deviation is the only essential movement of nystagmus which is labyrinthine, and that the quick movement must be regarded as cerebral.

The part played by the cerebellum in labyrinthine nystagmus has long been in doubt. The more recent experiments of Wilson and Pike corroborate what they reported some time ago, that "neither the slow deviation nor the quick return has any necessary pathway or any indispensable center in the cerebellum."

1. Wilson, J. G., and Pike, F. H.: Some Considerations on the Physiology of the Otic Labyrinth, Arch. Int. Med., December, 1914, p. 911; The Mechanism of Labyrinthine Nystagmus and Its Modifications by Lesions in the Cerebellum and Cerebrum, ibid., January, 1915, p. 31.

Bárány believes that the more complete recovery in man as compared with animals after labyrinthine extirpation is evidence of the retrogression of the vestibular system in man. Wilson and Pike object to this interpretation, and point out that the certainty and the severity of the motor disturbances immediately attending labyrinthine extirpation in the higher mammals is evidence of the persistence of the function of the vestibular mechanism. The more complete recovery in man is not necessarily to be interpreted as evidence of the retrogression of the vestibular system, but is to be regarded as evidence of the much greater degree of adaptability on the part of the highly complex somatic motor system and of the greater capacity for readjustment following certain lesions, inherent in the enormous development of association tracts in the central nervous system.

The modes of stimulation of the labyrinth, and its results, have been fairly well defined and are now available for diagnostic purposes. The deviation of the eyes which is the direct result of the labyrinthine irritation has a definite and now generally acknowledged pathway. Any irritative lesion here will cause labyrinthine symptoms—vertigo, nystagmus, etc.; and a destructive lesion will annul reactions normally produced from the labyrinth.

The quick phase which follows and is dependent on the slow phase has a separate and distinct pathway in the cerebrum. When this pathway is interrupted, they have found experimentally that while the normal slow deviation is present, the quick return movement is altered or suppressed. As this pathway passes through areas of the cerebrum in which lesions are difficult to diagnose, there is here the possibility of great usefulness.

In this issue Wilson and Pike[2] have shown the application of these principles to the diagnosis and treatment of vertigo as a symptom. Their complete study of this condition shows again the great value of scientific research applied to practical medicine.

THE DRINKING OF MINERAL WATERS

The drinking of mineral waters, particularly as it is practiced by thousands of patients who are sent for curative purposes to the numerous mineral spring resorts in all parts of the world, is an established therapeutic custom. The multitudes of persons who indulge in the water drinking at the spas, as well as the large number of physicians who repeatedly advise the treatment as an established routine, make it seem more than probable that the practice is a well-founded one. Yet we venture to believe that few at best of all those who adopt or prescribe the mineral spring therapy could offer a reasonably tenable explanation of precisely what they hope to accomplish thereby, and how they have succeeded. Thus it happens that the cure or the improvement of the patient is obvious; a reason for the satisfactory outcome is wanting. Consequently in some quarters there has arisen the same sort of nihilism in relation to mineral waters that one finds exhibited in respect to the use of drugs. It is the reaction against a blind empiricism.

When an interpretation of the alleged beneficial effects of drinking mineral waters has been indulged in, the answer is sometimes made that the effects are merely those of water drinking per se. Nothing specific is claimed other than a diuresis which has given rise to that overworked expression, "flushing out" the system — whatever it may mean. Again, residence at the mineral spas usually involves the simultaneous regulation of diet and the orderly pursuit of a carefully planned routine of living; also, it means a change of environment, new scenes and elimination of social and business worries. Rest and exercise, food, drink, baths — physical therapy, dietotherapy, balneotherapy, psychotherapy—are combined to create an internal and external hygienic environment of which the individual factors are not easily dissociated. The mineral water thus becomes a mere incident rather than a dominant force in the therapeutic success.

There are, of course, mineral waters which have a determined basis for their use. Strongly alkaline waters of the Vichy type have a rational use. Laxative waters find an explanation of their effects in the presence of known purgative salts. Chalybeate waters and those which contain arsenic may serve as useful means of administering well-known therapeutic agents. But for the majority of waters there exists a sort of chaos of explanation from which refuge is taken in the vague uncertainties of radio-activity or some similar indefinite novelty. For this reason we may welcome any serious attempt at a scientific analysis of the physiologic action of mineral waters, even if it leads us no farther than the domain of suggestive hypothesis.

The Prague pharmacologist, Professor Wiechowski, has based a tentative interpretation of the action of mineral waters on certain facts established by animal experimentation.[1] It is maintained that prolonged use of diets containing inorganic components in unlike proportions may lead to marked changes in the mineral composition of the body. Changes in the interrelations of the cations, for example, can be brought about. What is even more significant, however, is the assertion that organisms thus affected by an alteration of their usual inorganic makeup respond in unusual ways to various stimuli. An illustrative case is found in rabbits fed on an exclusive oat diet (which is espe-

2. Wilson, J. G., and Pike, F. H.: Vertigo, THE JOURNAL A. M. A., this issue, p. 561.

1. Wiechowski, W.: Ueber die wissenschaftlichen Grundlagen der Mineralwassertherapie, speziell des Karlsbader Mühlbrunns, Prag. med. Wchnschr., 1914, xxxix, No. 24. Sgalitzer, O.: Ueber die Wirkung des Karlsbader Mühlbrunns auf den Mineralstoffhaushalt der Kaninchen, Ztschr. f. Balneol., Klimatol. u. Kurort-Hyg., 1914, vii.

cially deficient in calcium). They are exceedingly sensitive to skin irritants, and unduly resistant to fever-producing processes. According to Wiechowski, the mineral waters may bring about an alteration in the cation relations of the organism — a reaction depending in the individual cases on the makeup of the water ingested. These changes in the inorganic environment alter the responses of the organism. It is impossible to foresee at present what changes in all manner of functions this may involve. In any event, the Bohemian investigator believes that it is reasonable to ascribe the essential therapeutic effects of certain mineral waters to these alterations produced by their ingredients. It is not so much a matter of adding more inorganic salts to an organism already well provided with them, as it is a change in the equilibrium between the various ions. It is unnecessary to cite experimental evidence bearing on the point involved, for it is to the hypothesis primarily that we have aimed to call attention.

SOME CONSTITUENTS OF THE BLOOD

It requires little argument to emphasize the great scientific importance of learning as much as possible respecting the chemical composition of the circulating blood. A precise knowledge of the make-up of this fluid would serve to tell a good part of the story of tissue metabolism. Investigators have long realized the inherent difficulties both in detecting and in determining quantitatively various constituents of the blood, owing to the minute amounts in which they are present in a unit volume of the circulating medium at any moment. One hundred c.c. of blood — a large quantity to furnish at once — ordinarily contain not more than 0.1 gm. of sugar. Yet even this small content renewed or discharged from moment to moment in the course of the circulation may represent the exchange of no inconsiderable total amount of carbohydrate in the course of a few hours.

Other constituents are present in even smaller amounts at any given moment, and inasmuch as the methods of analysis hitherto current have involved the examination of single samples of blood, it is not surprising that many substances suspected in this fluid have never really been identified. By employing large quantities of blood obtained from large animals, Abderhalden[1] actually separated from it some of the amino-acids absorbed from the alimentary tract. In other cases progress has depended on the application of special microchemical methods with the uncertainty that goes with them.

Several months ago we referred to a method of removing diffusible substances from the circulating blood of living animals by dialysis. This process, devised by Abel, Rowntree and Turner[2] of the Johns Hopkins Medical School, consists essentially in the continuous passage of the blood from an artery through a system of tubes made of celloidin immersed in a saline solution or artificial serum, and its return to a vein, thus yielding by dialysis certain of its constituents to the fluid surrounding the tubes. The relative proportions of the different non-protein nitrogenous substances in the diffusate do not vary greatly from those in the blood. The latest contribution attributable to this method is the actual separation of two amino-acid derivatives of protein — alanin and valin — in crystalline form.[3] Histidin and creatinin have been shown by reactions to be present. Oxyacids were found in noticeable proportions; lactic and beta-oxybutyric acids in particular have been identified.

1. The Amino-Acids in the Blood, Current Comment, THE JOURNAL A. M. A., Feb. 21, 1914, p. 621.

2. Abel, J. J.; Rowntree, L. G., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood of Living Animals by Dialysis, Jour. Pharmacol. and Exper. Therap., 1914, v, 275.

3. Abel, J. J.: Rowntree, L. G., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood of Living Animals by Dialysis, II, Some Constituents of the Blood, Jour. Pharmacol. and Exper. Therap., 1914, v, 611.

Current Comment

HEALTH INSTRUCTION IN AN INDIANA COUNTY

Common sense is an uncommon quality. Those who in their early youth read and enjoyed the William Henry Letters, will recall that this was a refreshing characteristic of that young hero. When sent away to a boarding school, he was told that he would have to take dancing lessons in order to learn how to enter a room. He could not see the need of taking lessons for this purpose. He said, "Just walk right in." One of the most difficult lessons to learn is that the way to do a thing is to do it. The county health commissioner of Union County, Indiana, feels that one of his duties is to teach the people of the county how to keep well. He has accordingly prepared a little seventy-five page pamphlet, made up largely of material published by the various state boards of health. The board of county commissioners made an appropriation to send a complimentary copy to every home in the county. The pamphlet is simply but forcibly written, and contains chapters on the home, contagious diseases and the baby. In the first chapter, the people are told how to keep their homes clean and healthful, how to dispose of their garbage, how to care for their food and how to take care of their bodies. Directions for disinfection and especially directions for various contagious diseases make up the second chapter, while the third and most important contains directions to mothers for the care of themselves and their children. We have been a long time in learning that if the teacher of good health would compete with the patent medicine man, he must meet him on his own ground. Instruction of the people on health topics is a public duty. It should not be left to professional zeal or to philanthropy. The publication and distribution of such pamphlets as the Union

County Health Book are directly and solely for the public good and will yield large dividends in the form of better health and prosperity for the people. If each county in the nation had a health officer as wide awake and a board of commissioners as broad minded as those of Union County, Indiana, the problems of the prevention of disease and the prolongation of life would be immensely simplified.

SCHOLARSHIPS IN MEDICAL EDUCATION, AND THE "POOR BOY"

As various reports on medical education have shown, it is the proprietary or commercially inclined medical schools which have been most avowedly solicitous for the "poor boy" but which do the least for him in return for what he does pay. The cry of "a medical education for the poor boy," therefore, has often meant a poor medical education (dear at any price) at the same or even greater cost than a good one, and this for the boy who is perhaps "poor" in scholarship rather than in purse. There is certainly no reason for encouraging the dullard or the ignoramus, even if he is also indigent, to attempt to practice medicine at the expense of the "poor" public. Yet it would be unfortunate if the career of medicine were indeed to be closed to ambitious and able young men because of lack of means. This danger has been emphasized in recent years by the increased expense connected with the teaching of medicine, which in turn, in some of the medical schools, has led to increased charges for tuition. On the other hand, some of the best medical teaching institutions, particularly the medical departments of state universities, have very low tuition fees, or, in some instances, make no charge except for laboratory fees. Again, in some of our best medical schools having high tuition fees, opportunities exist for determined students to make at least a part of their expenses; but the attempt to earn all expenses, while doing justice to the exacting work of a medical course, means a strain which few constitutions are fitted to endure. The solution of the problem lies in free scholarships to be awarded to good students who cannot afford to pay their own way. A review of the medical college announcements shows there is now a total provision for about 170 scholarships,[1] most of which are granted annually and are reserved for students of ability who are in need of financial aid. Included in the total are several which have been granted in recent years. In 1912, three scholarships were established at the Leland Stanford Junior University, School of Medicine, from "The Alumni Jordan Medical Scholarship Fund." In 1913, the Philadelphia Alumni Society of the University of Pennsylvania Medical Department founded a scholarship in honor of Dr. Roland G. Curtin. In 1914, through the generosity of an anonymous donor, ten free scholarships in the University of Cincinnati College of Medicine were announced. Last month a gift from Mr. James A. Patten of $27,000 was made to the Northwestern University Medical School to provide an endowment for eight free scholarships, and of these, two are to be awarded each year to the students with the highest standing in the College of Liberal Arts who enter the medical school and need such aid. It is to be hoped that these benefactions will serve as suggestions to men who are considering the direction which their philanthropies shall take, and that eventually all our best medical schools may have at their disposal a number of free scholarships sufficient to ensure that no promising student whose talents lie in the direction of medicine need to be prevented by poverty from entering on that work.

1. The medical schools which provide for scholarships and the number in each are as follows: Leland Stanford Junior University, School of Medicine, 3; University of California, College of Medicine, 1; Northwestern University Medical School, 8; University of Illinois, College of Medicine, 4; Indiana University, School of Medicine, 10; Johns Hopkins University, Medical Department, 7; Boston University, School of Medicine, 5; Harvard University Medical School, 23; Detroit College of Medicine and Surgery, 3; Washington University Medical School, 1; Columbia University, College of Physicians and Surgeons, 31; Syracuse University, College of Medicine, 1; University of North Carolina, School of Medicine, 1; University of Cincinnati, Medical College, 10; Western Reserve University, School of Medicine, 1; Hahnemann Medical College and Hospital, 3; Jefferson Medical College, 2; University of Pennsylvania, School of Medicine, 54; University of Virginia, Department of Medicine, 1.

THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

Beginning with January, 1915, the National Academy of Sciences has instituted the issue of a monthly journal, the *Proceedings*, which, in addition to being the official organ of publication of the Academy, will serve as a medium for the prompt presentation of brief original papers by members and other American investigators. Its aim will be thus to furnish a comprehensive survey of some of the more important results of the scientific research of this country, and it is intended to supplement, not replace, the papers appearing in special journals. The first number of the *Proceedings* contains, among others, papers on physiology and genetics, including a contribution by Davenport on "Violent Temper and Its Inheritance." This is an attempt to study the hereditary behavior of some of the elements of moral action — to analyze, by the methods of the Eugenics Record Office, the family history of persons who have marked emotional traits. Violent and more or less periodic outbursts of temper occur in families which are characterized by prevalence of epileptic attacks; also in those exhibiting cases of mania, and in others in which "hysteric" attacks are common. The special form of the attacks differs somewhat in these classes of families, but the method of inheritance of the tendency is the same in all, and it seems probable that in each class the simple symptoms of the emotional outburst are modified by the differences in these three classes of the nervous condition. The fact that the tendency to outbursts of temper does not skip a generation, according to the report of 165 family histories of wayward girls in state institutions, indicates that it is a positive or dominant trait. This tends to emphasize that such features have a typical hereditary basis, a statement which many sociologists who hold differences in the "conditions of life" responsible for the differences in men, are quite likely to dispute.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Clinic Opened.—A new tuberculosis clinic is to be opened at Ninth and Wilson Streets, Los Angeles, by Health Commissioner Luther M. Powers.

State Medical Board Appointments.—On January 22, the governor appointed Drs. Arthur M. Smith, Oakland; H. Clifford Loos, San Diego, and Harry V. Brown, Los Angeles, members of the State Board of Medical Examiners for a term of four years. Dr. Smith succeeds Dr. Samuel H. Buteau, Oakland, while the other members were reappointed. ——Dr. Adelaide Brown, San Francisco, has been appointed a member of the State Board of Health to succeed Dr. Oscar Stansbury, Chico; Dr. Frederick F. Gundrum, Sacramento, to succeed Dr. Wallace A. Briggs, Sacramento, and Dr. George F. Bright, San Francisco, to succeed Dr. Martin Regensburger of the same city.

FLORIDA

New Home for Tuberculous Insane.—The board of commissioners of state institutions has made arrangements at the Florida Hospital for the Insane, Tallahassee, for a building especially for the housing and treating of patients of the hospital who are afflicted with tuberculosis.

Model Vital Statistics Ordinance Passed.—The model ordinance for vital statistics has been passed by twenty Florida municipalities in addition to the registration cities. Eight other municipalities are expected to pass the ordinance in the near future, and it is under consideration by eleven other municipalities.

Branch Bacteriologic Laboratories Opened at Miami and Tallahassee.—The State Board of Health has recently opened two bacteriologic laboratories, which will be operated as branches of the central laboratory at Jacksonville. Both will be in charge of assistant bacteriologists of the State Board of Health, the one at Miami in charge of Dr. Iva C. Youmans and the one at Tallahassee in charge of Dr. William A. Claxton.

Hospital News.—A contract for the Morton F. Plant Endowed Hospital, Clearwater, has been awarded for $20,478.——There is at present at least $15,000 available for the construction of a new city hospital, Miami.——The Deland Hospital, located in the Nutt House, Deland, is now open and ready for the reception of patients. The institution at present will accommodate eight patients.——Former Governor Albert W. Gilcrist makes an urgent appeal for the establishment of a state hospital for indigent crippled children to be built in Jacksonville in accordance with a bill passed by the legislature of 1911.——The Emergency Hospital at West Palm Beach was reopened last month.——The mayor of Jacksonville is at the head of a movement to bring about the erection of a hospital for Jacksonville and Duval County and the Poor Farm at the City Prison Farm site. ——Dr. Calvin D. Christ, Orlando, has opened a sanatorium in Orlando in a building constructed especially for hospital purposes.——The East Coast Hospital Association has given notice of its intention to apply for charter. Its purpose is to establish a hospital at St. Augustine.

GEORGIA

Personal.—Dr. Robert C. Woodard has been appointed local surgeon for the G. S. and F. Railway at Adel.——Dr. Leon L. Moye, Vidalia, was operated on recently at Atlanta for peritonitis.

Surgeon Club Symposium.—The Georgia Surgeons' Club, Atlanta, will hold a two-day clinic in that city, February 25 and 26. On the evening of the first day, a symposium on "Surgical Indigestion" will be held.

Physicians Club Organized.—The Physicians' Club of Atlanta was organized, January 19, with an initial membership of more than 100, and the following officers were elected: president, Dr. George P. Huguley; vice-president, Dr. Edgar L. Griffin; secretary, Dr. S. T. Harris, and treasurer, Dr. William A. Arnold.

Work for Eradication of Hookworm.—The State Board of Health has issued a bulletin giving details of the hookworm work carried on in the counties of the second district. In November, 1911, the department of field sanitation of the State Board of Health began to institute free dispensaries in the counties of the second district. Work has been carried on in Early, Mitchell, Colquitt, Decatur, Grady, Thomas, Tift and Worth counties. A successful campaign is now in operation in Miller County and an appropriation for work begun in January has been secured for Baker County. The work must be done by June 30, 1915, because the organization then ceases.——Dodge County on January 21, appropriated $150 to supplement the funds given by the Rockefeller Institute for the campaign against hookworm and for better sanitation.——The work of the Rockefeller Sanitary Commission will come to an end in Georgia, June 30. Meanwhile, the State Board of Health is undertaking work in the various counties, Dr. Floyd D. Rodgers, Columbia, S. C., assistant director of field sanitation, being now engaged in Richmond County, where 66 per cent. of the rural population are said to be infected with the disease.

ILLINOIS

Leper at Club.—Angelo Lunardi, night watchman at the Exmoor Country Club, Highland Park, is suffering from tubercular leprosy and has been placed in isolation pending the decision of the question of his deportation.

College Closed on Account of Scarlet Fever.—McKendree College at Lebanon was closed early in February on account of the reappearance of scarlet fever in the school. Two new cases were found This is the second time within a month that the school has been closed on account of this disease.

Personal.—A committee of medical men from the Winnebago County Medical Society of Rockford presented a petition to the mayor, January 30, signed by practically every member of the society, requesting him not to accept the resignation of Dr. Daniel Lichty, Rockford, from the board of the Tuberculosis Sanatorium.——Dr. Thomas B. Knox, Quincy, has resigned as president of the Adams County Tuberculosis Society.——Dr. William Healy, Winnetka, has passed the examination for director of the Juvenile Psycopathic Institute, Chicago, with the highest average.

Chicago

Hospital Site Selected.—A new hospital to cost about $100,000 and to be known as the Concordia Evangelical-Lutheran Hospital, is to be erected on Hadden Avenue, near Kedzie, where the trustees have acquired a tract 300 by 117 feet.

Ventilation of Street Cars.—Under an amended ordinance the health department now has authority to supervise the ventilation of elevated and surface cars. Recently samples of air were taken from 220 cars. In 150 of these carbon dioxid was found in quantities far in excess of the standard set by the ordinances and suit will be filed on these violations. Suits have also been brought for failure to operate ventilating fans in 128 instances.

Society Incorporated.—The Robert Koch Society for the Study of Tuberculosis, which has been in operation for about two years, has been incorporated with the following charter members: Drs. Theodore B. Sachs, Henry B. Favill, Frank S. Johnson, Ethan A. Gray, John Ritter, Orville W. McMichael and James A. Harvey. One of the prime objects of the organization is the dissemination of information on tuberculosis among medical men at large.

Safeguarding Against Scopolamin Casualties. — The authorities of Michael Reese Hospital announce, as the result of their experience after a series of about forty obstetric cases treated by the scopolamin-morphin anesthesia, the so-called "Twilight Sleep," that they will not use this method in labor except with the express guarantee of the patient that the hospital shall be free from all liability as regards ill results to the mother or the child.

INDIANA

Decrease in Sales of Narcotics.—A report from the State Board of Pharmacy shows that there has been a very marked decrease in the sale of all narcotic drugs during the year 1914. This is thought to be due to the anticocain law which went into effect in 1913.

Sanitary Survey.—A sanitary survey of the schools of Porter County was started February 1 by Surg. Taliaferro Clark, U. S. P. H. S., with five assistants. This survey has been requested by Dr. Simon J. Young, Valparaiso, health commissioner of Porter County.

Free Clinic at Anderson.—St. John's Hospital, Anderson, has offered the clinic committee of the Council of Women of that city, the use of two well lighted rooms in the basement of the new hospital addition for the use of the clinic. The addition will be opened about March 15.

Vaccination Required by Large Industries.—The Union Traction Company of Indiana, it is reported, has issued an order at Muncie that all employees must be vaccinated if not previously thoroughly protected.——City Health Officer Noah D. Berry, Muncie, has also canvassed the large industries of the city asking the managers to secure prompt and effective vaccination of all employees, and it is believed the majority will comply with this request.

Bills Before the Legislature.—One of the most important bills introduced into the Indiana legislature and one which has received wide-spread support from medical men is the bill providing for the registration and quarantining of tuberculosis patients. This bill places tuberculosis in the same class as other contagious diseases. It provides for the complete registration of cases of this disease and report within twenty-four hours after discovery to the local health officer, making this report obligatory not only on physicians but also on nurses, employers, teachers and others; also requiring the complete disinfection of all houses wherein tubercular patients have died.——One of the legislative measures before the present house of representatives, which has received condemnation by members of both parties gives the governor, secretary of state and auditor of state power to appoint the secretary of the State Board of Health. This measure is aimed to remove Dr. John N. Hurty, Indianapolis, state health commissioner, who for nearly twenty years has been at the head of the hygienic, sanitary and medical work in this state.

MARYLAND

St. Luke's Hospital Closed.—Owing to lack of funds, St. Luke's Hospital, Baltimore, has been forced to close.

Brady Institute in Service.—The Brady Urological Institute at Johns Hopkins Hospital has been put into full service. Eight patients have been transferred from the hospital proper to the new rooms of the clinic. Fourteen ward patients have been installed in the last week and the admittance of the room cases put the new building into active service. No ceremonies were held in connection with the inauguration. The formal dedication of the institute is to be held in the spring. The building is entirely complete, with the exception of full equipment for the laboratory work and experiments. Nearly $250,000 has been spent in the venture, the gift of Mr. Brady of New York.

MASSACHUSETTS

Fire at State Infirmary.—Fire in the combination cloth and storage dormitories of the State Infirmary, Tewkesbury, caused damage of $2,000. Panic was avoided by the efforts of the superintendent and attendants.

Health Officers Elected.—At the annual meeting of the Massachusetts Association of Boards of Health, held in Boston, January 28, Dr. Milton J. Rosenau, Boston, was elected president, and Dr. Francis H. Slack, Boston, secretary.

Ambulance Chasers Law.—The first case under this new 1914 law accuses Harry Noonan of soliciting, procuring and attempting to procure the management and control of the claim of Gertrude Lake against the Boston Elevated Railway for an accident which occurred January 11.

Age Limit Raised.—The Massachusetts State Department of Health announces that for the first examination for the position of district health officer, under the regulations prepared by the Public Health Council of the department governing appointments and promotions of district health officers, the age limit has been raised from 32 to 36 years.

Censure of Dr. Cabot.—Publicity is given by the daily press to the fact that the Dorchester Medical Society at a recent meeting passed resolutions censuring Dr. Richard C. Cabot, Boston, for his criticism of the medical profession. Similar resolutions presented at the last meeting of the Norfolk District Branch of the Massachusetts Medical Society, in which district Dorchester lies, were debated and laid on the table.

Personal.—Dr. George B. Magrath, Boston, has been reappointed medical examiner of Suffolk County.——Dr. James L. Wellington, Swansea, the oldest graduate of Harvard Medical School, recently celebrated his ninety-seventh birthday anniversary.——Dr. William L. Richardson, Boston, has been appointed a trustee for the Perkins Institution and the Massachusetts School for the Blind.——Drs. Frederick C. Shattuck, Boston, and Clarence J. Blake, Boston, have been elected members of the board of managers of the Boston Children's Hospital.

MISSOURI

Asks Shifting of Appropriation.—The board of managers of the State Sanatorium for Tuberculosis of Mt. Vernon appeared before the house committee of Jefferson City, January 28, and made a plea for a more advantageous distribution of the appropriation recommended by the legislative committee. The amount appropriated was sufficient, but they asked that more buildings for patients be provided as this is more urgent at present.

Personal.—Dr. Charles R. Woodson, St. Joseph, was assaulted by a man who entered his office presumably to consult him professionally. Dr. Woodson overpowered him but was struck on the head with a pistol, suffering a fracture of the outer plate of the frontal bone. The man was intoxicated and later said he had no recollection of the assault. Dr. Woodson is recovering from the attack.——Dr. Dexter B. Farnsworth, Springfield, was presented with a gold-headed cane by the members of the Greene County Medical Society in recognition of his sixteen years' service as treasurer. He declined reelection.——Dr. Walter S. Wheeler, health commissioner of Kansas City, who underwent an operation last month, is said to be doing well.——Dr. James J. Brien, Oronogo, fractured a rib and sustained cuts and bruises by the overturning of his automobile, between Oronogo and Galesburg, recently.

St. Louis

Asks Appropriation to Fight Tuberculosis.—The St. Louis Society for the Relief and Prevention of Tuberculosis made an appeal at a public hearing with the board of estimate and apportionment for an appropriation of $75,000 to assist in the work against tuberculosis in St. Louis.

Research Department to Be Discontinued.—The board of directors of the Barnard Free Skin and Cancer Hospital took action at their December meeting to discontinue the research department as at present operated, the order to take effect April 1. The present financial situation is responsible for the retrenchment.

NEW YORK

Sanatorium Bonds Purchased.—The Trust and Deposit Company of Onondaga, Syracuse, has purchased the $185,000 bond issue for a tuberculosis sanatorium for Onondaga County, at a premium of $2,645.

Senate Gets Coroner's Bill.—The bill abolishing coroners in New York City and substituting medical examiners has been presented to the legislature with the endorsement of the New York City administration.

New Children's Hospital.—The Rochester Public Health Association has remodeled the third floor and attic of its building on Troup Street, to provide hospital wards for work by the association in its charter as a children's hospital.

Parole of the Insane.—The State Charities Aid Association reports that the reorganization of the parole system in the fourteen state hospitals for the insane has saved the state $87,000 in a year. Under this system many patients are returned to their homes and are frequently examined by medical experts. It is found that frequently the home environment has proved beneficial, and as the cost of maintenance of each patient is $200 per annum, this means a considerable saving to the state. The association advocates a judicious extension of the system.

New York City

Classes for Abnormal Children.—On February 8 there was opened at Speyer School, which is the experimental school of teachers college, a special class for exceptional children under the direction and with the cooperation of specialists in education psychology, elementary education and physical education of the college staff.

Caring for Mental Defectives.—Charity Commissioner Jerome Kingsbury has decided to consider the plan for a clearing house for mental defectives submitted by Dr. Max

G. Schlapp and has appointed a committee to cooperate with him in the matter. Dr. Charles L. Dana is chairman of the committee and Dr. Thomas W. Salmon, vice-chairman and secretary.

Typhoid Fever in Hospital.—Since January 12, twenty cases of typhoid fever have developed in Sloane Maternity Hospital, eighteen nurses and employees and two physicians being down with the disease. Thus far none of the 125 patients in the institution have contracted it. All efforts to discover the source of the outbreak have thus far been fruitless. Investigations show the sanitary condition of the hospital perfect and the water, milk and food supplies above reproach.

Personal.—Dr. Percy H. Williams, who has been giving his services in the relief work in Belgium since early in December, returned to his home in this city on February 5. ——Mt. Sinai Hospital has extended indefinitely the leave given to Superintendent Sigismund S. Goldwater that he may continue in his work as health commissioner of New York City.——Dr. Percy R. Turnure sailed for Europe, January 30, to take charge of a war hospital in France.—— Dr. Samuel Kutschler is critically ill with septicemia due to the bite of a child.

Health Commissioner Makes First Report to Mayor.—Dr. S. S. Goldwater has made his first official report to the mayor in which he enumerates 121 points in which he believes the health department has progressed during the past year. Much of this progress he attributes to the cooperation of the administration and of the newspapers. A saving of $170,472 out of the budget allowance was made as the result of careful economies. The report shows an increase of 5,513 births over 1913 and an increase in the number of marriages of 1,784. On receiving the commissioners' report, Mayor Mitchel sent him a letter commending the efficient work of the department.

NORTH CAROLINA

Hospital Notes.—Burlington is arranging to build a hospital 70 by 80 feet, to cost at least $20,000.——The name of the Telfair Sanitarium, Greensboro, has been changed to the Glenwood Park Sanitarium.——The Elizabeth City Hospital was thrown open to the public for inspection, January 2, and on January 7 the hospital was ready to receive patients. The institution has been erected and equipped at a cost of nearly $50,000 and is under the charge of Dr. John A. Saliba. ——A contract has been let for the erection of a new hospital at Hamlet to cost $20,000.

Progress of Community Health Work.—Six communities in all have completed the Rockefeller Hookworm Commission's plan of health work. These are Salemburg and Ingold in Sampson County, Red Oak and Mount Pleasant in Nash County, Philadelphus in Robeson County and Hallsboro in Columbus County. Almost every person in these communities has been examined for hookworm disease and every infected person treated. All homes, schools and churches have been provided with sanitary closets and marked advances in rural sanitation have been made along other lines.

Personal.—Dr. Clarence N. Peeler has resumed practice in Charlotte after several months postgraduate work in the East.——Dr. Martin W. Steele, Bowling Green, Ky., has succeeded Dr. Darius C. Absher, Mt. Airy, in community health work in Scotland County.——Dr. W. H. Kibler has succeeded Dr. Benjamin E. Washburn, Raleigh, as whole-time health officer of Nash County.——Dr. Platt W. Covington, Rockingham, is to have charge of community health work in Wayne County.——Dr. John Collison, who has been field director of hookworm eradication in North Carolina since September, 1913, and who has recently been engaged in community health work in Sampson County, is now with the Georgia State Board of Health.——Dr. M. E. Champion is to have charge of community health work in Pitt County.

OREGON

Osteopath on Legislative Committee.—J. E. Anderson, representative from Wasco, an osteopath, has been appointed by the speaker of the house, a member of the committee of medicine.

Physicians Organize.—Physicians of Klamath Basin have organized the Klamath Medical Society and have elected the following officers: president, Dr. Lawson L. Truax, Klamath Falls; vice-president, Dr. John L. Harris, Dairy; secretary-treasurer, Dr. Floyd M. White, Klamath Falls.—— The Tri County Medical Society, composed of physicians of Wasco, Sherman and Hood River counties, was organized at The Dalles, December 14, with an initial membership of 22.

Personal.—Dr. James B. Taylor, Eugene, is reported to have given up his home on account of ill health and has gone to live with his son on a ranch in California.——Dr. Glenn W. Wheeler, Portland, has accompanied the British ship *Clackmannanshire* on its trip to take supplies to the destitute inhabitants of Pitcairn Island.——Dr. Daniel J. McFaul has been appointed health officer of Pendleton.—— Dr. Frampton C. Brosius has been elected president of the Hood River Commercial Club.

PENNSYLVANIA

Philadelphia

Scientific Research Protection Society.—The Pennsylvania Society for the Protection of Scientific Research has planned the inauguration of an active campaign of publicity and education concerning medical research and animal experimentation. The society hopes that it will have the moral and financial support of the medical profession of Pennsylvania, and in order to bring this about has established a class of members to be known as contributing members. This is to include those who contribute $10 or more to further the object of the society. The chairman of this committee is Dr. William Pepper.

Lectures in Philadelphia.—Surgeon-General William C. Gorgas, U. S. Army, delivered an address at the Manufacturers' Club, January 27, under the auspices of the Philadelphia County Medical Society, on "The Sanitary and Hygienic Problems of the Canal Zone," in which he made the statement that the death rate among American mechanics in the Canal Zone was two and one-half per thousand, while in Philadelphia the rate among the same class of workers was fifteen per thousand. The address was followed by a reception and luncheon.——Dr. Simon Flexner, New York City, of the Rockefeller Institute, addressed the Philadelphia Pediatric Society, February 9, on "The Etiology and Mode of Infection of Epidemic Poliomyelitis." Dr. Flexner was tendered a reception after the meeting.——Dr. Hugh H. Young of Johns Hopkins University addressed the Philadelphia Clinical Association, February 15, on "The Diagnosis and Treatment of Various Diseases of the Prostate." ——Prof. Charles W. Stiles of the Rockefeller Hookworm Commission will give the ninth Weir Mitchell Lecture of the College of Physicians on February 16. His topic is: "An Experiment from the Standpoint of Applied Zoology in Medical Inspection of Schoolchildren as a Basis for an Intensive Public Health Campaign."

UTAH

Personal.—Dr. Claude L. Shields, Salt Lake City, has been appointed pathologist of Salt Lake County.

General Staff for County Hospital.—The Salt Lake County commissioners have decided to create a general staff of physicians to be in charge of the county health department and of the County Hospital.

Medical Inspection to Be Undertaken in the University of Utah.—A complete study of throat, eye, ear and nose ailments among pupils of the primary department of the secondary training school of the University of Utah is to be undertaken by the department of physical education. This is said to be the first school in the western intermountain region to undertake such work. From the results of this study statistics are to be compiled. Methods of inspection are to be taught to advanced students in the class of hygiene in the university, and it is expected that at least one teacher grounded in hygiene can be provided for each school in the state. A special appropriation for the work was recently granted by the university board of regents.

VIRGINIA

State Hospital Superintendents Meet.—The first conference of superintendents of hospitals for the insane and their staffs was held at the Eastern State Hospital, Williamsburg, January 26 and 27. An organization was perfected and the following officers were elected: president, Dr. Joseph S. De Jarnette, Staunton, Western State Hospital for the Insane; secretary, Dr. Albert S. Priddy, Madison Heights, superintendent of the Epileptic Colony.

State Assumes Full Control of the Hookworm Campaign. —The Rockefeller Sanitary Commission discontinued its

intensive study of hookworm disease in Virginia, Dec. 31, 1914. The State Board of Health has taken up the work and hopes to make free examinations and to dispense treatment as has been done in the past. During the five years that the State Board of Health has had the cooperation of the Rockefeller Commission more than half the counties of Virginia were surveyed for hookworm disease and intensive campaigns for its eradication were conducted in all counties where the disease was found very prevalent. A total of 101,932 persons were examined and 25,706 treatments were dispensed.

WASHINGTON

Rosenow in Spokane.—Dr. Edward C. Rosenow, Chicago, was the guest of honor at a meeting of the Spokane Medical Society, January 18, and delivered an address on "The Relation of Bacteriology to Appendicitis, Ulcer of the Stomach and Gall-Bladder Infection."

Fire at Hospital.—Fire destroyed St. Mary's Hospital, Walla Walla, January 27, with a loss of $100,000. Although the building was a wood structure, all patients were removed safely. The surgeon-general of the Army has authorized the use of the Old Hospital, Fort Walla Walla, until St. Mary's Hospital can be rebuilt.

Personal.—Dr. Eugene R. Kelley has resigned as secretary of the State Board of Health and has been succeeded by Dr. Thomas D. Tuttle, Galen, Mont. Dr. Kelley has been placed in charge of the department of communicable diseases of the Massachusetts State Board of Health and will assume his duties, February 20.——Dr. James H. Lyons, Seattle, has been appointed medical director of the Kings County Hospital.——Dr. Charles R. McKinley has been appointed division surgeon for the Great Northern System, with headquarters at Brewster.

WISCONSIN

Personal.—Dr. Norman F. Hoffman, Milwaukee, recently appointed superintendent of the State Sanatorium, Wales, succeeding Dr. John W. Coon, Wales, has entered on his new duties.——Dr. Harmon J. Wall, Richland Center, announces his retirement from practice.——Dr. W. C. Watkins, Oconto, has been appointed local surgeon for the Chicago, Milwaukee and St. Paul System.

Placarding Communicable Diseases.—Owing to trouble which has arisen with reference to the diagnosis of small-pox and chicken-pox, the city health authorities in Racine, in order to be on the safe side, have made a ruling that in the quarantining of houses for the various infectious diseases only one card shall be used, reading "Communicable Diseases Here." Racine, like other cities, has had the experience that severe cases of small-pox have arisen apparently from exposure to cases of so-called chicken-pox. The disease present may be ascertained by reference to the health board records.

GENERAL

Gynecologists Meet.—The annual meeting of the American Gynecological Society was held in St. Louis, January 29 and 30, and the following officers were elected: president, Dr. George Gellhorn, St. Louis; secretary-treasurer, Dr. Frank F. Simpson, Pittsburgh, and councilor, Dr. William E. Studdiford, New York City.

Missouri Valley Meeting.—The spring meeting of the Medical Society of the Missouri Valley will be held at the Hotel Fontenelle, Omaha, March 25 and 26, under the presidency of Dr. Granville N. Ryan, Des Moines, Ia. The oration in medicine will be delivered by Dr. Charles Spencer Williamson, Chicago, and that in surgery by Dr. Fred Handlett Albee, New York City.

A Warning.—THE JOURNAL has published repeated warnings against a subscription swindler who offers subscriptions to magazines and premiums of valuable medical books. The Periodical Publishers Association have offered a reward for information that will lead to his arrest. He has been described as about 21 years old, 6 feet tall, weighing about 180 pounds, black hair, very dark and large eyes, rather pale, deep falsetto voice. The magazines usually offered are Current Opinion and The Literary Digest. When last heard of he was working in Baker, Ore.

Campaign Against Tuberculosis Among Workmen.—The National Association for the Study and Prevention of Tuberculosis in a new campaign against tuberculosis among workmen has appointed a committee to formulate plans for immediate action. A special health bulletin will be sent monthly to the labor papers, and an investigation is planned into the various special experiments of cooperation between workingmen and the antituberculosis movement that have been carried on in this country, as the relief associations in Hartford and other Connecticut cities, Buffalo, Newark, Albany, Chicago and other places. Reports on the results of this investigation will be made the basis for recommendations and further study in industrial communities. Theodore B. Sachs, Chicago, is chairman of the committee, and among the members are Samuel Gompers, George W. Perkins, John Mitchell, Austin B. Garretson, Dr. William Charles White and David R. Lyman.

Personal.—The committee on military affairs has recommended that Senate Bill No. 2789, which awards the medal of honor to Major John O. Skinner, M. C., U. S. A. (retired), Washington, D. C., be passed.——The house military committee, to which was referred Senate Bill No. 5525, authorizing the President to appoint Major William O. Owen (retired colonel in the medical list of the active corps of the Army), Washington, D. C., has recommended the passage of the bill. Major Owen was retired in 1905, on the findings of the examining board that he was incapacitated for active service by reason of a fusiform aneurysm of the arch of the aorta. Major Owen has now submitted certificates of ten well-known physicians of Washington and Baltimore, two of whom are Roentgen-ray specialists, and all of whom unite in the opinion that Major Owen, at the time of the examination during April and May, 1914, was in excellent physical health. The bill drafted by the Judge Advocate General, approved by the Surgeon-General and transmitted by the Secretary of War, requires that Major Owen pass both a physical and professional examination before the appointment can take place under the act.

CANADA

Personal.—Colonel Fiset, the Canadian deputy minister of militia, has been promoted to the post of surgeon-general of the Canadian army medical corps. Colonel Fiset was on active service in the South African War.——Dr. Robert R. Stirrett, Swift Current, Sask., has been appointed temporary medical officer of health, in place of Dr. Kelly.——Dr. Thomas W. Walker, Saskatoon, has been elected president of the Saskatoon Medical Society; Dr. Andrew Croll, Saskatoon, vice-president, and Dr. J. T. McKay, secretary-treasurer.

Small-Pox Among the Six Nations.—A serious and extensive outbreak of small-pox is reported among the Indians of the Six Nation Indian Reserve in Brant County. More than sixty cases had been reported within two months up to January 20. The Indian Department at Ottawa having appealed to the Health Department of Ontario for assistance, Dr. Robert W. Bell, Toronto, inspector of health, investigated the infected districts and has reported to the Dominion authorities that the situation is serious, the disease having been lurking in the settlement for two or three years without any adequate effort having been made to control it.

FOREIGN

American Colleges Recognized.—The two London royal colleges, those of the Surgeons and Physicians, respectively, commonly referred to as the conjoint board, have adopted a resolution that they admit to their final examinations under certain conditions graduates of foreign medical colleges which are reorganized by the conjoint board. The new regulations provide that two years must have elapsed following graduation before such candidates are eligible for admission to the English qualifying examination.

Sanitary Conference in Portuguese India.—A conference of physicians and government officials was held recently in the Portuguese territory on the west coast of India to study matters affecting the public health. A number of resolutions were adopted favoring measures in regard to malaria, tuberculosis, etc., conforming with modern progress, and an urgent appeal was made to have the municipalities take direct charge of the milk supply or at least aid in the inauguration of a cooperative milk-supply service under their control. The protection of wells and the construction of additional ones was also advocated. One resolution was aimed at quackery and illegal practice of medicine, as it advocated a systematic and scientific study of the flora and indigenous drugs and "secret remedies." The *Medicina Contemporanea* of Lisbon mentions in its report of the conference that the medical school at the capital, Nova Goa, will soon celebrate its seventy-third anniversary, and another conference is called for that date.

WAR NOTES

Red Cross Reenforcements.—The American Red Cross announces that three surgeons will leave for Europe shortly. These are Dr. Earl B. Downer, Lansing, Mich., who is assigned to Hospital Unit No. 1 at Belgrade, Servia, and Drs. James E. Stowers, Kansas City, Mo., and Edgar L. Gilcreest, Gainesville, Tex., who will replace two of the American surgeons in the Red Cross Hospital at Paignton, England.

Fatalities in French Corps.—The first list that has come to hand that makes any pretensions to completeness appears in the *Caducée*, which has just arrived. It gives the names and titles of fifty-two French surgeons who have been killed and of thirty-one wounded. The list of killed includes two undergraduates, Senator Reymond, and Dr. A. Marie, physician in chief of the Villejuif asylum. Their deaths were mentioned in the Paris Letter at the time.

Meningitis Outbreak Traced to Valcartier Camp.—It is stated that the Canadian troops will remain in England until all the meningitis cases at Salisbury Plain have terminated. The outbreak started at Valcartier, the first death taking place at Quebec and the second on arrival at Plymouth. There have been twenty-five deaths and only two recoveries out of twenty-nine cases. Two patients are now in the hospital, regarded as incurable. Five cases have occurred among children at Salisbury. Professor Ashworth of the Lister Institute is studying the outbreak.

Appreciation for Special Gallantry Under Fire.—The French government publishes notices in the official journals calling attention to the special services and gallantry of certain persons, describing each by name and title and the special action in detail. The Austrian government does the same, and these touching tributes often fall to the lot of the members of the medical and nursing staff. The last *Wiener klinische Wochenschrift* gives the names and titles of six surgeons thus singled out for special mention on account of brave and devoted services under fire. (Anbefohlen, dass die kaiserliche belobende Anerkennung bekanntgegeben werde: in Anerkennung tapferen und aufopferungsvollen Verhaltens vor dem Feinde; the name and title follows. The French notice reads: Le gouvernemente porte à la connaissance du pays la belle conduite, etc.) The German authorities decorate with the iron cross for special gallantry under fire or services otherwise; the mere conferring of this decoration is equivalent to calling the attention of the country to the recipient's devoted services.

Aid for Belgian Physicians.—Dr. F. F. Simpson, Jenkins Arcade Building, Pittsburgh, Pa., treasurer of the committee of American physicians for the aid of the Belgian profession, announces for the week ended Feb. 6, 1915, the following contributions:

Dr. Willard Bartlett, St. Louis, Mo.	$ 10.00
Dr. M. Manges, New York, N. Y.	15.00
Dr. G. D. Hale, P. A. Surg., U. S. N., San Francisco, Cal.	10.00
Dr. Alfred Wiener, New York, N. Y.	10.00
Dr. John Woodman, New York, N. Y.	5.00
Dr. Robert T. Frank, New York, N. Y.	10.00
Cash—B, Pittsburgh, Pa.	10.00
Dr. R. O. Raymond, Flagstaff, Ariz.	10.00
Dr. A. Hymanson, New York, N. Y.	5.00
Dr. Mazyck P. Ravenel, Columbia, Mo.	15.00
Oklahoma State Med. Assoc., Muskogee, Okla.	100.00
Dr. H. H. Sherk, Pasadena, Cal.	25.00
Dr. Charles Lee King, Pasadena, Cal.	20.00
Dr. James Williamson, Philadelphia, Pa.	5.00
Dr. J. S. Kauffman, Blue Island, Ill.	5.00
Dr. John P. Treanor, Dorchester, Mass.	10.00
The Clinical Club of Albany, Albany, N. Y.	25.00
Dr. Thomas J. Watkins, Chicago, Ill.	50.00
Dr. H. E. Oesterling, Wheeling, W. Va.	10.00
Dr. Leslie W. Schwab, Chicago, Ill.	2.00
Dr. A. Howard Smith, Marietta, Ohio	5.00
Dr. Woodson H. Taulbee, Maysville, Ky.	5.00
Total	$ 362.00
Previously reported receipts	2,166.00
Grand total	$2,528.00
Previously reported disbursements	$2,090.00
Disbursements week ending Feb. 6th	440.00
Total disbursements	$2,530.00
Deficit	$2.00

Dr. Lewis S. McMurtry, Louisville, Ky., and Dr. Charles A. L. Reed, Cincinnati, Ohio, have consented to become members of the committee of American physicians for the aid of the Belgian profession. At the request of the treasurer, the executive committee has arranged to have the accounts audited quarterly. The first audit will be about March 20.

LONDON LETTER

LONDON, Jan. 22, 1915.

First Issue of New Journal

In the *Journal of the Royal Naval Medical Service*, a new periodical which made its first appearance in January, Surgeon-General Donald T. Hoskyn, R. N., of the Royal Naval Hospital, Hong Kong, has a note on the use of subcutaneous injections of the salts of emetin. He refers to six cases, of which he reports two; first, one of diarrhea with some constitutional disturbance and stools containing blood and mucus, was successfully treated with subcutaneous injections of emetin hydrochlorid, ⅙ grain, morning and evening. In the second case, in which 1 grain of emetin was administered daily at one dose, amebas were found. The patients who received only 1 grain were cured with an average of 5½ doses in fifteen days, while those who received ⅙ grain twice a day required 16½ doses and forty and one-half days. Thus he concluded that larger doses save time. The author also speaks from experience of the value of the drug in simple colitis, in which only one injection was required to effect a cure. The new journal contains also articles on the British antarctic expedition, 1910-1913, by Staff-Surgeon E. L. Atkinson, R. N.; on the naval action off Heligoland, by Fleet-Surgeon Walter K. Hopkins, R. N.; on the treatment of the wounded at three of the naval base hospitals, by the respective medical officers; a simple method of localizing bullets, by Surgeon S. Bradbury, R. N.; a report by Fleet-Surgeon M. L. S. Rodd, R. N., on the transport and treatment of wounded on the hospital ship *Plassy*; on typhoid and its prevention, by Fleet-Surgeon P. W. Bassett Smith, C. B., R. N., and on the flying service from a medical point of view, by Staff-Surgeon Hardy V. Wells, R. N. The journal is edited by Fleet-Surgeon R. C. Munday, R. N., and Fleet-Surgeon W. L. Martin, R. N.

The War

THE AIR RAID ON THE EAST COAST

After dark one evening, German airships appeared over the unfortified towns of Yarmouth and King's Lynn and dropped bombs. In the former town a shoemaker, aged 53, and a woman aged 72 were killed by the explosion. At King's Lynn a woman, aged 26, and a boy, aged 14, were killed. Arrangements have been made by the police in London, and other places where air raids are likely to take place, for the prompt rendering of first aid to the victims. Dressing stations have been arranged to which physicians have been assigned. A warning has also been issued to all persons to take cover preferably in basements or cellars, in case of aerial attack. It is pointed out that in the streets, danger will be incurred not only from bombs dropped from air craft but also from the falling of missiles from guns directed against them.

THE SHORTAGE OF PHYSICIANS

Women have been admitted to the medical profession in this country for about a generation, but their practice apart from hospitals and even to a certain extent in them has been almost confined to women and children. This is partly due to their own desire and partly to the view of the public as to their sphere. The war has considerably altered the position. At the front, five hospitals are staffed entirely by women. At home, the scarcity of physicians resulting from the needs which are constantly increasing in consequence of the expansion of the army has produced a great demand for women physicians and dispensers to fill the places vacated by men. Another cause of increased demand for women physicians is the national insurance act. Under it five million women are insured and a great number take advantage of the free choice of physician allowed and select a woman. At some hospitals, the difficulties in filling vacancies in the resident staff is so great that it has been found impossible to carry out the rule by which appointments must be held by qualified physicians. Medical students have to be appointed. It is understood that the War Office will require 1,200 more physicians in connection with the new armies. This, of course, will further increase the difficulty.

A MOTOR OPERATING THEATER AND A MOTOR LABORATORY

A motor operating theater has been devised by an Aberdeen surgeon, Mr. G. H. Colt, with the idea of constructing the smallest theater in which an operation can be performed in comfort, and arranging that the contents shall be as light as possible. By using a 3 ton chassis it has been found that the length of the interior of the theater can be increased to 13 feet 4 inches, and the width to 6 feet 6 inches. In addition,

a cab can be provided in front 5 feet wide and 3 feet 6 inches from front to back. The design is intended to provide for the continuous use of two operating tables. The scheme has not yet been adopted by the War Office. A fully equipped motor bacteriologic laboratory has been placed at the service of the War Office by an anomymous donor. The main laboratory is 6 feet 6 inches long and 6 feet wide, and is equipped with glass covered bench top, sink, centrifuge, balances, microscope, book shelf, water cistern, reagents, etc. A smaller compartment 2 feet 10 inches in depth by 6 feet wide is separated from the laboratory by sliding doors and contains two incubators, hot air and steam sterilizers, still and condenser, autoclave and water bath. Electric current for general and microscopic illumination is obtained by a dynamo driven from the engine. In association with the laboratory car is a motorcycle with side car attachment which provides a means of fetching pathologic fluids and specimens from points nearer the firing line than the car itself would ordinarily reach. Captain A. C. H. Gray, assistant professor of pathology at the Royal Army Medical College, is in charge of the laboratory.

BRITISH HOSPITALS FOR THE BALKANS

The dispatch from this country of a hospital unit for Serbia has been previously reported in THE JOURNAL. Two more hospital units are now being sent to the Balkans, one to Serbia and the other to Montenegro. The Serbian unit is in charge of Mr. James Berry, the well-known surgeon, and will be transported free of cost by the British Admiralty. A full medical and surgical outfit, as well as clothing, and other comforts for the Serbian people will be taken. Excepting one surgeon and the radiographer, the staff consists almost entirely of women—the house surgeon, dressers, eight nurses and five women orderlies. It is being furnished by the Royal Free Hospital, which is the medical school for women in London, to which Mr. Berry is senior surgeon. The unit for Montenegro is in charge of Dr. F. G. Clemow, and the staff consists of two surgeons, two trained nurses, two voluntary aid detachment women, and four male orderlies.

PARIS LETTER

PARIS, Jan. 21, 1915.

The War

INTERNS OF THE HOSPITALS AND THE WAR

The minister of war has recently decided that medical students who have passed the *concours* for internships in cities where there is a Faculté de médecine, may, so long as the war lasts, be nominated at their request where vacant places exist for the grade of *médecin aide-major* (grade corresponding to that of sub-lieutenant). In order to qualify they must have filled the position of intern for at least a year and have had the four years' work required for the doctor's degree. Professor Landouzy, dean of the Faculté de médecine de Paris, has drawn the attention of the minister of war to the fact that the second condition may deprive the health service of a considerable number of valuable assistants. It frequently happens that the interns, being more devoted to the hospital than to the school, postpone the examinations which permit them to qualify for the doctor's degree. So far as competence goes, however, the years of the internship, lived in contact with patients, are much better guarantees than the years of class-room instruction. As Landouzy says, between the student who has passed all his examinations and the student performing the duties of an intern there is the same difference that there is between a cadet finishing his course in the military school and the soldier who has seen active service. There are interns who, though they have had only three years' class room work, are expert assistants, whose aid would be particularly desirable under present circumstances.

The medical group in parliament in a meeting held under the presidency of Dr. Léon Labbé, senator, has decided to ask the minister of war for the immediate nomination to the grade of assistant physician (corresponding to that of non-commissioned officer) of medical students who have had three years' of medical school work and interns of the hospitals in cities where there is a faculté de médecine.

THE FOOD-SUPPLY OF THE ARMIES IN THE FIELD

At the last session of the Société de pathologie comparée, M. Maurice Piettre, a veterinary officer, presented a long report on this subject. In order to economize the stock of the country, already much depleted by the first five months of the campaign, it would be desirable to have recourse, as has already been proposed, to pork, which is very nutritious and cheap at this time of the year. The real solution of the problem, however, consists, according to M. Piettre, in the liberal use of frozen meats from South America and Australia, the purchase of which, in spite of speculation, should permit an important economy in our home-grown meat. M. Piettre has studied carefully the adaptation of the food-supply to the new conditions of the war—a war of siege with sojourn in trenches where it is almost impossible to supply cooked meats and vegetables. The solution will consist in putting into practicable form the physiologic ration for intensive labor (150 gm. of albuminoids, 100 gm. of fats and 500 gm. of carbohydrates). The problem of albuminoids has already been solved by the regulation 300 gm. can of meat in which, the waste matter having been removed, there is from 50 to 60 gm. of fat. Another class of canned food (vegetables) needs to be devised which shall contain the remainder of the ration of fat, that is, from 100 to 150 gm. of lard or roast pork and 500 gm. of vegetables (carrots, peas, beans, string beans, lentils, etc.) in suitable mixtures and with suitable seasoning. Provisions for marching or for the trenches would thus be reduced to two classes of cans, one of meat (beef or pork) the other of vegetables with fat, which could be warmed up in a few minutes by the use of solidified alcohol.

The excessive use of meats presents many inconveniences. The need of vegetables and even of cooked fruits (apples and prunes) is keenly felt in the trenches. As the chemist, Armand Gautier, has said, there is danger in drawing more than 60 or 65 per cent. of the food nitrogen from flesh foods. The weight of the protein ought not to exceed one-fourth of that of the ternary substances.

A SIMPLE MEANS OF EXTRACTING FOREIGN BODIES IN WOUNDS OF WAR

In a recent session of the Académie de médecine, Dr. Lacroix called attention to the procedure of injections of hydrogen peroxid in wounds of war in which bones are fractured. The foaming up from the interior of the wound brings the foreign bodies with it. Independently of Dr. Lacroix, other surgeons have experimented with this procedure, and it has given good results when the foreign bodies consisted of fragments of clothing. It is less efficacious when metallic fragments are present, especially if they have become encrusted into the walls of the wound.

PARLIAMENTARY INVESTIGATION INTO THE HEALTH OF THE ARMY

The commission of public hygiene of the Chamber of Deputies has asked the minister of war for an opportunity to collect information with regard to the working of the health services of the army. Three subcommissions of four members each are about to visit the sanitary formations. The first subcommission accompanied by Dr. Chavasse, medical inspector-general, will visit the army zone. During its absence the other subcommissions will investigate the hospitals, etc., in the zone of the interior with a view to suggesting all possible improvements.

BERLIN LETTER

BERLIN, Jan. 12, 1915.

The War

MEDICAL CASUALTIES

According to the latest official list, 132 medical men have so far been killed in the war, 22 wounded, 45 have died and 166 are missing or prisoners. Among the medical victims of the war are, unfortunately, three distinguished scientists. A few days ago, Professor Jochmann, the medical head of the infectious department of the municipal Rudolph Virchow Hospital, succumbed to typhus fever which he acquired in the examination and treatment of Russian prisoners, of whom 800 are ill with typhus. In Jochmann, who was only 40, we have lost one of our most talented young internists, who was endowed with an extraordinary combination of preparatory training in bacteriology and clinical experience in the field of infectious diseases. He laid an especially thorough foundation for the study of disease as a pupil of Professor Strumpell at Breslau and of Lenhartz at Hamburg. In the Virchow Hospital, the infectious department of which is in combination with the Robert Koch Institute for Infectious Diseases, he had a splendid opportunity to extend his clinical experience and place it on a broad bacteriologic basis. He published the results of his investigations in numerous articles and addresses and further in contributions to various

treatises. As the most mature fruit of his work a text-book on infectious diseases appeared a few weeks ago. This must be considered both from its contents as well as from its illustrations as the leading work in this field, at least in German literature. It must be regarded as an especial tragic circumstance that Jochmann himself died from an infectious disease, one almost wholly unknown in Germany, but now present in our country as a consequence of the war.

Another victim of the war is Professor Sprengel, the superintendent of the surgical department of the Ducal Hospital in Brunswick. He died from sepsis at the age of 62, having infected himself at an operation on a wounded soldier. Sprengel was an excellent practitioner and had published a large number of excellent monographs, particularly one on appendicitis. He was a collaborator on Deutsche Chirurgie and on the text-book of Kocher and de Quervain.

The Freiburg dermatologist, Professor Jakobi, died in the field as a result of disease. This scientist, who had reached the age of nearly 53, was an assistant of Neisser, and joined the faculty of Breslau in the department of skin diseases in 1890 and in 1895 was appointed professor extraordinary. In addition to numerous single treatises, he published an atlas of skin and venereal diseases and in connection with Neisser was the editor and publisher of *Iconographia dermatologica.*

IRON CROSSES FOR PHYSICIANS

To date, 2,700 physicians and surgeons have received this decoration for valor. It is moreover notable that the efforts of the leaders of the army to make the medical officers equal in rank with the regular army officers have found expression in the bestowal of the iron cross. While in the Franco-German War of 1870-71 the iron cross for physicians was awarded only to be worn on the ribbon provided for a non-combatant, in this war they receive it on a black and white ribbon, such as is given the fighting soldiers as a reward for gallantry.

TRANSPORTATION OF THE WOUNDED

While in the beginning the transportation of the wounded in our army was somewhat imperfect, on account of the extreme demands imposed on the medical service by the great battles of the immense army as well as on account of the preference which was given to the trains for troops and ammunition over the medical service, later and particularly in the last months complaints of such imperfections have ceased. This is essentially due to the better equipment of the hospital trains, which provide for a quicker and more suitable removal of the wounded from the seat of war to the base hospitals and especially to their home districts. In the equipment of the hospital trains, private persons and officials have competed, as in all other fields of social and military benevolence. Many cities and well-to-do persons have placed hospital trains of this sort at the disposal of the government. A few days ago, one of the most comfortable trains, fitted out by a member of the world-renowned banking house, Bleichröder, at an expense of $25,000 (100,000 marks) was placed in service and Professor Israel was put in charge. It is worthy of special recognition that Professor Israel, in spite of his 67 years, should undertake so difficult a service.

THE CONSERVATION OF FOOD SUPPLIES

The measures which the government has now taken to an increased extent to secure economy in the employment of foodstuffs, especially of grains and particularly of wheat are not to be taken as a sign of established need. Our supplies of foodstuffs are sufficient until the next harvest, and the present limitations on their use prescribed by the government may be regarded as a wise provision, a precaution taken at the right time. These precautions have, in fact, the purpose of preventing careless disregard to economy in the matter of nutrition but not to force an insufficient nutrition. On the other hand, it will be of advantage for the health of our people if the excessive consumption of meat, which has grown more and more as a result of our prosperity in the last few years, can be reduced to an intelligent moderation based on hygiene. The same is true, naturally, of the use of alcohol and other luxuries. People will learn how to get along with the restriction in the production of pastry which stands in close relation to the reduction of wheat flour. It appears likely that we shall not need to depend for our nutrition simply on our own agriculture but will be assisted directly or indirectly by the neutral states in spite of blockading (Einkreisungspolitik). Since Russia has raised the embargo on exportation of eggs for Sweden and Bulgaria for beans, cheese, lard and hogs, these foodstuffs no doubt will reach us.

Association News

THE SAN FRANCISCO SESSION

Chairmen of Subcommittees of Local Committee on Arrangements

The local Committee on Arrangements for the San Francisco session has appointed the following as chairmen of its several subcommittees:

FINANCE: J. Henry Barbat.

HOTELS, HEADQUARTERS AND INFORMATION: George B. Somers.

HALLS AND SECTION MEETINGS: W. P. Lucas.

COMMERCIAL EXHIBITS: R. E. Bering.

ENTERTAINMENTS AND PRESIDENT'S RECEPTION: Emmet Rixford.

SECTION ENTERTAINMENTS: W. P. Lucas.

PRESS AND PUBLICITY: Sol Hyman.

SCIENTIFIC EXHIBITS: William Ophüls.

Communications which naturally fall under one of these divisions should be addressed to the chairman of the appropriate committee at 916 Butler Building, San Francisco.

Additional Special Trains[1]

THE AMERICAN MEDICAL DIRECT ROUTE SPECIAL

This train is routed over the Chicago and Northwestern Railroad, Union Pacific and Southern Pacific, and the schedule noted below is arranged with a view of making the trip between Chicago and San Francisco in as short a time as is practical. The following schedule is announced:

Lv. Chicago	Friday	June 18,	5:30 p. m.	C. & N. W. Ry.
Ar. Omaha	Saturday	June 19,	6:00 a. m.	C. & N. W. Ry.
Lv. Omaha	Saturday	June 19,	6:30 a. m.	U. P. Ry.
Ar. Ogden	Sunday	June 20,	9:10 a. m. (M.T.)	U. P. Ry.
Lv. Ogden	Sunday	June 20,	11:30 a. m. (P. T.)	S. P. Co.
Ar. San Francisco	Monday	June 21,	11:00 a. m.	

Leaving Chicago Friday, June 18, via the Chicago and Northwestern Railway, the line west and northwest of Chicago which, with its connections, the Union Pacific and Southern Pacific, formed the first transcontinental line, the route traverses the northern part of Illinois, crossing the Mississippi River at Clinton, Iowa, and passes through the central portion of Iowa, a region noted for its productive farms and rich dairies. The Missouri River is crossed at Omaha, early on the morning of June 19. From this city, the route closely follows the old overland stage trail to Ogden, Utah, a distance of about 1,000 miles. This historic wagon road was the pioneer overland route before the building of the railway. Following the Platte River Valley, the road gradually reaches a higher altitude. Shortly after leaving Cheyenne, Wyo., the train passes through Sherman, the highest point on the route. Between Sherman and Ogden, the interest of the traveler will be centered on Green River, Rock Springs, Evanston, Echo and Weber Canyons. The train is scheduled to arrive at Ogden at 9:10 a. m., Sunday, June 20, Mountain Time, and will leave at 11:30 a. m. Pacific Time, by way of the Southern Pacific. The roadway is directly across the Great Salt Lake over the "Great Salt Lake Cut-Off," so that travelers enjoy the novelty of "going to sea by rail," since for 30 miles the train crosses the lake.

Through Nevada and California, the train passes such historic places as Donner Lake, Emigrant Gap, Blue Canyon, American River, Sacramento and Benicia, and is scheduled to reach San Francisco on Monday morning, June 21, at 11:30.

This Direct Route Special train is scheduled to make the run between Chicago and San Francisco in sixty-five and one-half hours.

THE AMERICAN MEDICAL GRAND CANYON ROUTE SPECIAL

The American Medical Grand Canyon Route Special is scheduled to leave Chicago, June 13, via the Santa Fe, and to permit visits to the Grand Canyon and the Panama Cali-

1. Other special trains to San Francisco were announced in THE JOURNAL, Feb. 6, 1915, p. 527; rates in the issue for Jan. 30, 1915, p. 457.

fornia Exposition at San Diego en route. The entire day of June 16 will be spent at Grand Canyon, Arizona, and the day of June 18 at San Diego, arriving in San Francisco Monday morning, June 21, at 9:40. An additional fare of $7.50 is charged for the Grand Canyon side trip. The Pullman rates for lower berth are $5 more than the rate for direct routes without stopover.

Following is the schedule:

June 13—Leave	Chicago	8:05 p. m.
June 14—Arrive	Kansas City	8:45 a. m.
June 14—Leave	Kansas City	9:00 a. m.
June 14—Arrive	La Junta	10:45 p. m.
June 15—Arrive	Albuquerque	11:00 a. m.
June 16—Arrive	Grand Canyon	6:50 a. m.
June 16—Leave	Grand Canyon	7:40 p. m.
June 17—Arrive	Los Angeles	2:40 p. m.
June 17—Arrive	San Diego	6:30 p. m.
June 19—Leave	San Diego	8:40 a. m.
June 19—Arrive	Los Angeles	12:50 p. m.
June 20—Leave	Los Angeles	5:00 p. m.
June 21—Arrive	San Francisco	9:40 a. m.

The route followed is along the historic old Santa Fe trail. As will be noted, the train leaves Chicago at night, reaching Kansas City early the next morning. The next day the train passes through Kansas, late in the afternoon of June 14 reaching Colorado, and then through Trinidad and across Raton Pass during the night. Early the next morning, June 15, it will be in the adobe land, the territory of the Mexican and Pueblo Indians. It is interesting to note the development of the country which has resulted from the conservation of the water supply, and similar agricultural developments. The Glorieta Range is crossed at an elevation of 7,453 feet. Here, Starvation Peak, and the old Pecos Church are of interest. Further south is Albuquerque on the Rio Grande, which point should be reached at 11 in the morning of June 15. Here, a stop of half an hour will be made, permitting a visit to the Indian museum on the station grounds. Immediately after leaving Albuquerque, the uphill climb to the Continental Divide begins, and the Indian village Isleta is passed. This settlement was an old one when Coronado visited it in 1540. During the afternoon the train passes through the black lava flows and huge red cliffs. The morning of June 16 will find the train parked on the brink of the Grand Canyon of the Colorado. The entire day will be available for trips along the rim of the Canyon, or for going down the Bright Angel Trail. The train leaves Grand Canyon at 7:40 p. m. From this point, it is practically down hill all the way to the eastern boundary of California, where the Colorado River is crossed at Needles. By daylight on June 17, the train will be in the Mojave Desert. About noon, it will pass down the slopes of Cajon Pass across fertile acres of fruits and flowers, and is due to reach Los Angeles at 2:40 in the afternoon. The special will not stop at Los Angeles but will go through to San Diego. The journey from Los Angeles to San Diego is through orange, olive and walnut groves, passing beautiful little cities and the San Juan Capistrano Mission, perhaps the most picturesque of all the old missions. Then for many miles the road skirts the Pacific, and the train should reach San Diego at 6:30 in the evening. The famous Hotel del Coronado is just across the bay. The entire day, June 18, is given to seeing San Diego and the Panama California Exposition. Leaving San Diego at 8:40 a. m., June 19, the train will return to Los Angeles, reaching that city at 12:50 p. m. Here the train will be parked at the Santa Fe station until 5 o'clock of the afternoon of June 20, when the special will leave for San Francisco, arriving at 9:40 Monday morning, June 21.

Morbidity Reports.—Morbidity reports when recorded over a period of time and properly compiled become a record of the past occurrence of disease. They show the relative prevalence of disease from year to year and under varying conditions. They show the effect of the introduction of public health measures and of sanitary works. They give a history of disease not obtainable in their absence.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

Marriages

AMY BELL ROHRER, M.D., and Rev. August Frederick Albert Neudoerffer, at Rajahmundry, Madras Presidency, India, Dec. 3, 1914.

PHILIP NEWTON, M.D., Washington, D. C., to Princess Helene Schaholfskaya of Kiev, Russia, at Petrograd, Russia, recently.

CAPTAIN ERNEST ROBERT GENTRY, M. C., U. S. A., to Miss Lydia Fuller, at Fort Leavenworth, Kan., February 6.

MARK DELIMON STEVENSON, M.D., Akron, Ohio, to Miss Martha von Norelly of Vienna, Austria, January 29.

LEONARD PRATT DAWS, M.D., Juneau, Alaska, to Miss Effie Lenore Buzard of Albany, Mo., Dec. 30, 1914.

RACHEL BUCHANAN MCMASTER, M.D., and Rev. Samuel Hutson Hay, at Winnsboro, S. C., Dec. 29, 1914.

RAY SAMUEL FRIEDBY, M.D., Akron, Ohio, to Miss Mary Emily Thomas of Delaware, Ohio, Dec. 31, 1914.

WILLIAM ALBERT DEARMAN, M.D., to Miss Stella Wright Gates, both of Long Beach, Miss., Oct. 28, 1914.

ROBERT HOLBROOK SMITH, M.D., Akron, Ohio, to Miss Anna Robinson Finley of Oak Park, Ill., January 25.

AUGUST HERMAN MEISE, M.D., to Miss Alice Grace O'Hara, both of New York City, Oct. 27, 1914.

JAMES SAMSON, M.D., to Miss Lillian Baines, both of Detroit, Dec. 5, 1914.

Deaths

Surgeon Carl DeWolf Brownell, M.D., Lieutenant Commander, U. S. Navy (retired). New York University, New York City, 1888; a Fellow of the American Medical Association and a member of the Association of Military Surgeons of the United States; who was placed on the retired list, Jan. 20, 1914, on account of disability resulting from an incident of the service; died at his home in Providence, R. I., January 28, aged 48.

William P. Keasby, M.D. New York University, New York City, 1888; formerly of Perth Amboy, N. J.; later a druggist in Hollywood, Cal., and a resident of Los Angeles; a patient in the California Hospital of that city; died in that institution, January 20, as the result of an incised wound of both arms, self-inflicted, it is believed, with suicidal intent while despondent on account of ill health.

Aaron Ivins Comfort, M.D. University of Pennsylvania, Philadelphia, 1860; surgeon of volunteers during the Civil War; a Fellow of the American Medical Association; for twenty-three years surgeon at the National Soldiers' Home, National Home, near Milwaukee, Wis.; died in that institution, January 31, four days after a fall, in which he sustained a fracture of the hip, aged 89.

Daniel C. Noble, M.D. New York Homeopathic Medical College, 1892; of Middlebury, Vt.; for ten years health officer of that city and for a long time a member of the board of trustees of the Vermont Sanatorium, Pittsford; from 1908 to 1910 surgeon-general of Vermont; died in the Hayes Sanatorium, Burlington, Vt., January 18, aged 52.

Robert S. Bennett, M.D. Kansas City (Mo.) Medical College, 1877; a Fellow of the American Medical Association; formerly surgeon of the Kansas City Southern Railway, at Drexel, Mo., but for the last four months under medical treatment in Kansas City; died in his apartment in Kansas City, January 24, aged 53.

Albert Bledsoe Wayland, M.D. University of Virginia, Charlottesville, 1897; a Fellow of the American Medical Association and a well-known practitioner of Albemarle County, Va., but for a year a resident of San Antonio, Tex., on account of his health; died at his home in Crozet, Va., January 25, aged 40.

D. Morris Thurston, M.D. Cincinnati College of Medicine and Surgery, 1875; a member of the State Medical Association of Texas; surgeon at Beeville, Tex., for the San Antonio and Aransas Pass and Southern Pacific systems; died in a sanatorium in San Antonio, Tex., January 25, aged 62.

George W. Gray (license, Minnesota Exemption Certificate, 1883), a member of the Minnesota State Medical Association; formerly of Brownsdale and Austin, Minn.; died recently at his home in Minneapolis, aged 61.

Silas Hall, M.D. Physio-Medical Institute, Cincinnati, 1875; Columbus (Ohio) Medical College, 1891; formerly a member of the Indiana State Medical Association and a practitioner of Vincennes; died in the Woodmere Hospital, Evansville, Ind., Oct. 29, 1914, from nephritis, aged 65.

Ernest Wesley Russell, M.D. University of Vermont, Burlington, 1879; a Fellow of the American Medical Association and a member of the surgical staff of St. Mary's General Hospital, Lewiston, Maine; died at his home in that city, January 27, from cerebral hemorrhage, aged 56.

Thomas F. Keen, M.D. University of Maryland, Baltimore, 1881; formerly a member of the Medical Society of Virginia; president of the Hamilton (Va.) Bank; one of the most widely known practitioners of northern Virginia; died at his home in Hamilton, January 24, aged 57.

William Layton, M.D. University of Louisville, 1868; of St. Louis; first assistant physician at the Eastern Kentucky State Hospital, Lexington, for several years; died in Webster Groves, Mo., Dec. 9, 1914, from the effects of an accidental fall from a second story window, aged 78.

George S. Courtright, M.D. Medical College of Ohio, Cincinnati, 1862; Miami Medical College, Cincinnati, 1868; a Fellow of the American Medical Association; surgeon of volunteers during the Civil War; died at his home in Lithopolis, Ohio, January 19, aged 74.

Harry Clifton Boutelle, M.D. Harvard Medical School, 1899; a Fellow of the American Medical Association; a member of the Board of Health of Danvers, Mass., and physician to the public schools of that city; died at his home, January 26, from pneumonia, aged 39.

Isham Henry Clayton Cook, M.D. Louisville (Ky.) Medical College, 1875; formerly a member of the Mississippi State Medical Association and vice-president of the Forrest County Medical Society; died at his home in Hattiesburg, Miss., January 22, aged 61.

Arthur Field Hinman, M.D. Syracuse (N. Y.) University, 1910; later intern in the St. Joseph Hospital, Syracuse, and thereafter a practitioner of Auburn, N. Y.; died at the home of his parents in Clyde, N. Y., from carcinoma of the intestines, aged 31.

Adolphus E. Chamberlain, M.D. Hahnemann Medical College, Chicago, 1881; of Yuma, Mich.; died at his home in that place, January 9, from the effects of a gunshot wound of the head, self-inflicted, it is believed, with suicidal intent, aged 56.

Aurelius Martin, M.D. University of Louisville, Ky., 1881; a member of the Mississippi State Medical Association and once president of the Granada County Medical Society; died at his home in Hardy Station, Miss., January 23, aged 56.

Francis Marion Flinn, M.D. St. Louis College of Physicians and Surgeons, 1895; formerly a medical officer of the Montana National Guard, and later of Deeth, Nev.; died at his home in Molta, Mont., January 15, from nephritis, aged 53.

George Grosline Rutledge, M.D. Starling Medical College, Columbus, Ohio, 1886; of Owensville, Ohio; a member of the Ohio State Medical Association; died suddenly, January 22, from heart disease, while making a professional call, aged 52.

James Rea Crawford, M.D. University of Pennsylvania, Philadelphia, 1899; a member of the staff of the Polyclinic Hospital, Philadelphia; died suddenly from heart disease in his room in that institution, January 15, aged 40.

Samuel W. Gibson (license, Virginia), surgeon in the Confederate Service during the Civil War and for more than forty years a practitioner of Russell County, Va.; died at his home in Castlewood, Va., January 17, aged 89.

Théophile Gonaux, M.D. Tulane University, New Orleans, 1885; for several years physician to the French Society, New Orleans; died at his home in that city, January 15, aged 64.

Malcolm James Farrish, M.D. Trinity Medical College, Toronto, Ont., 1891; died at his home in Sherburn, Minn., January 22, from tuberculosis, aged 50.

Harrison V. Appley, M.D. Philadelphia University of Medicine and Surgery, 1877; died at his home in Grand Rapids, Mich., January 21, aged 62.

Cornelius F. Yeager, M.D. College of Physicians and Surgeons, Baltimore, 1884; died at his home in Mineral Wells, Tex., January 19, aged 67.

John Weir Wiestling, M.D. University of Pennsylvania, Philadelphia, 1866; died at his home in Vandalia, Ill., January 19, from dropsy, aged 72.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

CELERINA, ALETRIS CORDIAL AND KENNEDY'S PINUS CANADENSIS, LIGHT AND DARK

Report of the Council on Pharmacy and Chemistry

The following reports on products of the Rio Chemical Company have been submitted by a referee. The Council recommends that they be published, as the preparations discussed are glaring instances of nostrums exploited through physicians on unscientific claims and false representations.

W. A. PUCKNER, Secretary.

Celerina

Celerina belongs to what Samuel Hopkins Adams calls the "bracer" type of nostrum. According to the label it contains 42 per cent. alcohol (whisky contains about 50 per cent.). The other ingredients of Celerina are declared to be as follows:

"Each fluidounce represents Forty grains each Kola, Viburnum, Forty-eight grains Celery, Twenty grains Cypripedium, Sixteen grains Xanthoxylum and Aromatics.

"Dose—1 or 2 teaspoonfuls 3 times a day."

Kola contains a very small percentage each of caffein and theobromin. It is impossible for the infinitesimal amounts of these alkaloids in an ordinary dose of Celerina to produce any physiologic effect.

Viburnum has been called a "uterine sedative," whatever that may be. Its only real activity is the psychic one due to its taste and odor.

Celery at one time was credited with being both an antispasmodic and a nerve stimulant—a remarkable combination of opposing qualities! Scientific investigation has failed to show that celery has any physiologic or therapeutic activities. If it had the slightest medicinal value, the rational course would be to prescribe it in its fresh and natural state. The small dose contained in a teaspoonful of Celerina is inappreciable and not even equivalent to that contained in a stalk of celery.

Ladyslipper, more imposing under the Latin name of "cypripedium," is a flowering plant with a legendary reputation as an "antispasmodic and nerve stimulant." It has been in the therapeutic scrap-heap for years. It contains a little tannic acid, gallic acid and a volatile oil. Even a tannic acid action cannot be expected from a teaspoonful of a preparation containing 20 grains of ladyslipper to the ounce.

Prickly ash (xanthoxylum) has never been shown to have any activity other than that of a local irritant, especially to mucous membranes. The slight "bite" from this drug would be entirely covered up by the alcohol in Celerina. Any stimulating effect which this drug may have on the stomach is greatly inferior to that produced by a very small glass of ordinary ginger ale.

In short, there is no ingredient in Celerina, except the alcohol, that has any recognizable activity; and the alcohol content is nearly as great as that of ordinary whisky. Some of the claims and recommendations for this nostrum are:

"Celerina (Nerve Tonic), for Nervousness, Hysteria, Insomnia, Nervous Indigestion, Languid and Debilitated Conditions, Recovery from Alcoholic Excess."

Think of prescribing an alcoholic nostrum four times a day to promote recovery from alcoholic excess!

"NEURASTHENIA: The bane of the general practitioner; the puzzle of the neurologist; the juicy fruit of the quack and faddist; the opportunity of the intelligent therapist. . . . For the medical treatment CELERINA is the preparation of wide utility."

The *sang froid* with which the exploiters of this nostrum refer to other "quacks and faddists" as reaping "juicy fruit"

from neurasthenics would command admiration were it not so pitiful.

"Celerina has substantial endorsement in nervous disorders characterized by Aphonia (nervous)."

Of course, the disappearance of nervous aphonia might follow the application of any treatment whatever, be it Eddyism, Chiropractic, Peruna or Celerina.

"CLIMACTERIC (the Menopause) flattering results have been reported from a combination of equal parts Celerina and Aletris Cordial Rio."

"Teaspoonful doses after meals and upon retiring have proven efficacious [in "dyspepsia"] when other remedies have failed."

Here is a good example of proprietary-house therapeutics: Such widely different conditions as digestive trouble and the climacteric are to be treated with a combination of alcohol, simple bitters and aromatics! Why not order a cocktail under its own name? It would be equally efficacious, less mysterious and its dangers might be better realized!

"A teaspoonful or two in three tablespoonfuls of boiling hot water [for insomnia] upon retiring."

Any other hot toddy at bedtime (and it need not cost a dollar a bottle) might give relief; but the intelligent physician to-day recognizes the danger of prescribing alcohol in such conditions.

"In the case of brain workers who suffer from nervous excitability and mental fatigue, the administration of Celerina in teaspoonful doses, three times a day and at bedtime, rapidly controls the condition and increases mental capacity."

And the same effect follows its use:

"In cases involving worry, anxiety, overwork, and excesses of various kinds. . . ."

Morcover:

"Celerina is the most prompt and efficient of remedies for devitalized or broken down constitutions—doses four times a day."

The statement made by its manufacturers that this preparation is free from narcotics or habit-forming drugs is not true. Alcohol is both a narcotic and a habit-forming drug.

As in the case of other nostrums containing no potent drugs but alcohol, Celerina is recommended for various diseased conditions in combination with a familiar form of treatment by drugs of more or less value. The physician who thoughtlessly prescribes one of these combinations will without doubt unthinkingly attribute any subsequent improvement to the Celerina. Thus, for malaria, a prescription of quinin and Celerina is advised; for chorea in children, arsenic with Celerina; in "Convalescence from La Grippe," strychnin sulphate, Fowler's solution, and Celerina; for impotence, nux vomica, dilute phosphoric acid and Celerina. In none of these conditions would Celerina affect favorably anything except the pockets of the exploiters; in some, as in the chorea of children, the alcohol would be positively detrimental. Of course, the value of such prescriptions (so far as they have any apart from the fictitious value lent by the alcohol) resides altogether in the standard drugs prescribed with Celerina.

There is no possible excuse for writing a prescription for Celerina, either in original package or mixed with well-known or valuable drugs. The sooner it is realized that this preparation has no place in medicine, should never be prescribed by physicians and is essentially nothing but alcohol and bitters exploited under a fancy name, the better for the public health and the science of medicine. The continued sale and use of Celerina is a disgrace to the medical profession.

Aletris Cordial

Aletris Cordial is a nostrum containing therapeutically worthless drugs in alcohol (28 per cent.).

The "formula" on the label reads:

"Each fluidounce represents ten grains Aletris, thirty grains Helonias and thirty grains Scrophularia."

At one time these drugs had some vogue, chiefly as domestic remedies. They have been discarded as valueless by modern scientific medicine.

Aletris, or unicorn root (Aletris farinosa), contains a bitter principle and starch. The remarkable uterine tonic properties formerly ascribed to it have not been confirmed by reliable observers. It is practically worthless.

Helonias, or false unicorn (Chamaelirium luteum), is asserted to be a hemostatic and uterine tonic. No trustworthy evidence has ever been offered in support of the claims made for this drug; reliable medical literature contains no reference to it; it has no valid claim on the attention of physicians.

Scrophularia, or figwort (Scrophularia marilandica), contains a principle which has a digitalis-like action on the heart. Its activity is so slight in comparison with that of digitalis, however, that there was nothing to be gained by studying it. The drug is consequently little known and is not mentioned in critical works on pharmacology. If the drug were therapeutically active in the quantities used, another danger would be added to that of the alcohol content of Aletris Cordial. Since the recommended dose (a teaspoonful) contains, if the formula be correct, only about 4 grains of figwort, this drug too may be regarded as practically inert in this preparation.

Not one of these drugs has been deemed worthy of mention in the Pharmacopeia. The Council has previously discussed them and declared them valueless (Reports Council Pharm. and Chem., 1909, p. 146; 1910, p. 10; 1912, p. 42).

In Aletris Cordial, then, there is no ingredient capable of producing any other effect than the alcohol stimulation and such psychic effect as may be due to the bitter taste. Yet physicians are asked to believe that

"Probably no remedy is so uniformly successful in the prevention of threatened miscarriage as ALETRIS CORDIAL Rio."

"HABITUAL MISCARRIAGE can be effectually overcome by the systematic use of Aletris Cordial Rio."

". . . regulates the local circulation and imparts normal tone and strength to the uterine muscle."

"The use of Aletris Cordial Rio throughout pregnancy goes far to assure normal, uncomplicated labor."

Such claims as these, when made for a mixture containing no therapeutically active constituent except alcohol, are absolutely preposterous. It should be noted that the declared alcohol content of Aletris Cordial is much higher than that of the strongest wines, and, in the light of medical experience, quite high enough to promote the formation of the alcohol habit in a steady user. The following recommendation, taken from the company's "Budding into Womanhood" circular, therefore, is outrageous:

"Many medical practitioners recommend to mothers the use of Aletris Cordial Rio for their growing daughters, ranging in age from twelve to eighteen years. . . ."

It is to be hoped that no medical practitioner is so heedless of consequences as to prescribe for adolescent girls a worthless nostrum capable of creating a craving for alcohol. The temperance societies might with profit take steps to inform laymen, especially women, concerning the worthlessness of this nostrum, the risk involved in taking it, and the outrageous character of the recommendations made for it by the manufacturers.

Kennedy's Pinus Canadensis, Light and Dark (Abican and Darpin)

Kennedy's Pinus Canadensis, Light (recently renamed "Abican") and Dark (renamed "Darpin") are also exploited by the Rio Chemical Company. Although they have been on the market some thirty or forty years they appear to have achieved no marked degree of commercial success. Yet they have been imitated by most of the pharmaceutic houses. They are of interest chiefly through the barefaced fraud involved in their exploitation.

COMPOSITION CLAIMED

Apparently the dark preparation ("Darpin") was first put on the market; then the light one ("Abican") was offered, to be used only "as an injection and externally." The reason for the existence of the light preparation evidently was the objectionable property of the dark, which stained linen. The

two preparations are both said to be extracts of Pinus Canadensis or hemlock bark. A circular issued some years ago contained the following statement:

"Pinus Can. (Ken.)—*Dark*—A non-alcoholic extract of Pinus Canadensis, to each fluidounce of which is added 0.48 grains Thymol.

"Pinus Can. (Ken.)—*Light*—A non-alcoholic extract of Pinus Canadensis, to each fluidounce of which is added 24 grains each of pure Alum Potash and Sulphate of Zinc and 0.48 grains of Thymol."

The labels on the packages of the light and dark preparations sent out to-day bear, respectively, only the following references to composition, the first on the dark and the second on the light:

"Each fluidounce also contains 0.48 grains Thymol."

"A non-alcoholic preparation of Pinus Canadensis, to which is added twenty-four grains each pure alum potash and sulphate of zinc and 0.48 grains thymol to the fluidounce."

ACTUAL COMPOSITION

"Darpin" or Kennedy's Pinus Canadensis, Dark, does contain tannin, but, as the simplest of chemical tests demonstrate, Pinus Canadensis, Light, does not contain tannin. It might as truthfully be called maple syrup or beef tea.

It is almost a work of supererogation to discuss the therapeutic claims made for preparations sold under false pretenses as to composition. It is enough to mention that Kennedy's Pinus Canadensis, Dark or Light, is recommended in

Albuminuria	Hemorrhage from the Nose
Diarrhea-Dysentery	Uterine Hemorrhage
Fetid Perspiration	Leucorrhea
Endometritis	Nasal and Pharyngeal Catarrh
Fissures	Piles
Fistula	Sore Throat
Gonorrhea	Ulceration of the Cervix

The intelligent physician of to-day knows that his forefathers in the days of the stage-coach employed tannic acid in its crude form and treated intestinal disease in a very unsatisfactory manner; he knows, further, that advances in our knowledge of pathology have rendered the use of tannic acid in gastro-intestinal therapeutics largely unnecessary and that when it is used it should be in some form that will pass the stomach unchanged. So far as its use as local application is concerned, he knows, without need of instruction from the Rio Chemical Company, when tannin is indicated, and the Pharmacopeia furnishes a suitable preparation for the physician so that he need not resort to an unscientific nostrum like Darpin.

The physician who is competent to treat a case of gonorrhea does not need to be told that alum and zinc sulphate may be useful in such conditions, and he does not want them palmed off on him for something else under the name of Pinus Canadensis, Light, Abican or what not. Also, he prefers to use them when they are needed singly and in strength suited to the conditions of the individual case.

[Editorial Comment.—Celerina, Aletris Cordial and Kennedy's Pinus Canadensis, Light and Dark, appear to be the entire output of the Rio Chemical Company, which was one of the earliest of the various companies organized by James J. Lawrence of *Medical Brief* fame. The business was moved from St. Louis to New York City in 1901. According to what we believe to be reliable information, the Rio Chemical Company is now composed of James P. Dawson, president; William W. Conley, vice-president and treasurer; and E. D. Pinkerton, secretary. These also constitute the directors. It appears that James P. Dawson is a member of the law firm of Dawson and Garven, St. Louis; E. D. Pinkerton is said to be Miss Effie D. Pinkerton, stenographer for Dawson and Garven. We know little concerning William W. Conley except that he appears to be in charge of the establishment in New York. We find no evidence that he is either a chemist or a pharmacist; his name does not appear in the membership list of the American Chemical Society or of the American Pharmaceutical Association, nor can we discover that he has published anything in the way of chemistry or pharmacy. As a matter of fact, the Rio Chemical Company is another of the pseudo-chemical companies created to exploit one or more proprietaries—in this instance Celerina, Aletris Cordial and Pinus Canadensis. The following medical journals carry advertisements of the Rio products, (or did late in 1914): *American Journal of Surgery, American Medicine, Denver Medical Times and Utah Medical Journal, Eclectic Medical Journal, International Journal of Surgery, Interstate Medical Journal, Massachusetts Medical Journal, Medical Brief, Medical Century, Medical Council, Medical Review of Reviews, Medical Sentinel, Medical Standard, Texas Medical Journal* and *Woman's Medical Journal*.]

Correspondence

U. S. Public Health Service Report on a Tuberculosis Treatment

To the Editor:—In reply to your editorial (The Journal, Jan. 23, 1915, p. 347), I wish to discuss the experimental work of my methods, as recorded in Dr. Stimson's report, in almost every paragraph of which I find serious misstatements, important omissions and disregards of specific instructions which, when corrected, will show the justice of my general objection that the report is unfair and misleading and that the investigation itself was conducted in such a manner that the failure of the experiments was inevitable. I wish to state that I am prepared to supply documentary and other evidence for every assertion I shall make.

1. Dr. Stimson stated to me on his first arrival that he had no practical experience in the work contemplated. He never even suggested to conduct his work independently or without my general supervision; on the contrary, he stated that his object and purpose would be attained if he were given an opportunity to make the infections and autopsies on animals which I considered resistant, and with serums which I considered germicidal, regardless of whether or not he succeeded in applying certain tests which served me as guides for the purpose of avoiding failures. On or about Oct. 4, 1913, Dr. Stimson changed his attitude and proposed "independent" work in the sense that this was to be secret, by excluding me from all knowledge of its conduct. This I promptly refused, not because I lacked confidence in my methods but because I had reason, under the circumstances, to lack confidence in the investigator.

2. Dr. Stimson's statement that he used an entirely fresh preparation of my vaccine in his experiments is not in accordance with his personal knowledge or with that of his superior officers.

The facts are that the vaccine which he used was supplied by me for comparative chemical studies, together with a letter to Dr. Anderson, expressly forbidding its official use, for reasons stated, namely, that it was not entirely fresh and had not been tested for its efficiency. I withdrew my consent to its use for any purpose whatever, a few days later, in a letter to Surgeon-General Blue, for good and sufficient reasons.

No vaccine or serum was supplied by me thereafter until May, 1914. The vaccine which I supplied then, we sent on the condition (because likewise not entirely fresh) that no report should be made on results obtained with it, provided that I supplied an entirely fresh and, in my opinion, superior preparation as soon as this could be finished, namely, within six months from April 24, 1914. This agreement was sanctioned by Assistant Secretary of the Treasury Hon. Byron R. Newton, and is in my possession bearing his signature.

I did supply the entirely fresh specimen of vaccine within the time stated. Neither this nor the specimen of May, 1914, was used, and the report was made prematurely and in violation of the agreement.

3. According to printed directions supplied by me for the use of the partly fresh vaccine, the animals treated with the older specimen of October, 1913, were insufficiently treated, and were infected with ten times the prescribed quantity of virulent tubercle bacilli.

4. The serums used by Dr. Stimson prior to May 15, 1914, were neither supplied nor tested by me. They were apparently removed, secretly and without my knowledge and consent, from my laboratory.

5. The serums used by Dr. Stimson on May 15 were six days old on that date. My directions conditioned the need of entirely fresh serums and the content of certain maximal amounts of specific antibodies, which were not found in sufficient quantities when we made our own tests. Dr. Anderson was promptly informed of this and, to give him the opportunity of making experiments with fresh serums, I offered to have persons living in Washington, who had been vaccinated by us, call at the Hygienic Laboratory to be bled. He did not avail himself of this offer. Numerous other specimens of serums, some of them closely approximating the necessary content of specific antibodies, were afterward sent, but were not used in the experiments on which Dr. Stimson reports.

Without further comment I submit the foregoing facts as bearing directly on the experiments on which Dr. Stimson formulated his conclusions.

As to the reference, at the end of the editorial article, to the suspicions which Dr. Stimson directs against our personal integrity and honesty, these would have been ignored entirely by me, as a matter beneath my dignity to defend; but, since they impressed the editor, I will state that the correctness of certain records was a matter of dispute between the chief of my laboratory and Dr. Stimson. The latter having called my attention to them (which, by the way, did not in any manner concern him), I made a personal examination, accepted the records as correct, and myself directed the entry in the record book on the day following, to complete the records, from memoranda and personal statements by the chief of the laboratory, after his being fully corroborated by an assistant who had aided in the work. Dr. Stimson's objections were based on inferences only.

The following papers now in course of preparation, and bearing on the subject, will appear in the near future: "A Critical Examination of Dr. Stimson's Report," "Further Experimental and Other Studies on Prophylactic and Therapeutic Immunization in Tuberculosis," "The Results of a Collective Inquiry on the Practical Use of My Vaccine, by Several Hundred Independent Observers," "Pseudo-Tuberculosis in Guinea Pigs, and Its Relation to Failures in Tuberculosis Experiments." We also expect reprints on the experimental results obtained with the vaccine and with serums from vaccinated persons, in the laboratory of Sir Almroth E. Wright, as soon as the report has been published in London. To any physician interested and requesting it, one or all of them will be mailed.

KARL VON RUCK, M.D., Asheville, N. C.

[The foregoing letter was referred to the Surgeon-General of the U. S. Public Health Service. The following is the reply:]

Washington, Feb. 2, 1915.

To the Editor:—Your letter to Surgeon-General Blue, U. S. Public Health Service, enclosing one from Dr. von Ruck which is to be published in THE JOURNAL, has been referred to me for comment. Dr. von Ruck's letter contains serious charges against me, and I appreciate your courtesy in permitting an opportunity for reply. I am under a disadvantage in two particulars: first, that my report[1] on the von Ruck methods had only the limited distribution of a Senate document and is not available to most of those who will read the criticism of it, and second, that in this limited space I shall have difficulty in presenting adequately all the facts concerning von Ruck. The service has on file letters from him which, if they could be published *in toto*, would show to any reader the unscientific attitude of Dr. von Ruck, and trace his evasions and contradictions, and the obstacles which he threw in the way of the investigation, dating from the time when he ascertained that it was to be a sincere and impartial effort to ascertain the truth, and not a mere admiring inspection, as it were, over his shoulder.

Taking up his letter in detail, I deny first of all that there are any misstatements or important omissions in the report. The only "disregards" of specific instructions were of his instructions which were given with a view of frustrating the investigation, or of delaying it until the same influence which brought about the investigation could be importuned to abolish it. I had no motive for animosity toward Dr. von Ruck, and should have been only too glad to have assisted in indorsing his methods, which, if his claims had been true, would have been of undoubted value to mankind. Unfortunately he was unable to substantiate his claims, and I should have failed in my duty as a public servant, had I not made this clear in my report. I shall now refer to his criticisms seriatim.

1. My statement to Dr. von Ruck regarding my lack of experience in the line of work contemplated has been abbreviated by him so as to give the impression that I had admitted my incompetence to undertake the investigation. I told him that I was familiar with the theory and practice of procedures in serology, which he had applied by methods of his own (in reality of his assistant's) devising, to the study of tuberculosis, but that I was naturally unversed in his application of them. So is every one else outside of his laboratory. His methods are peculiarly his own, and peculiarly unreliable.

Never from the beginning of the investigation did I contemplate anything but an independent investigation, and if I failed to make this clear at the outset, it was because I assumed that he was a scientist and would ask for no other kind. His phrase "a sympathetic investigation" was not then familiar to me. I outlined my proposed course to him as follows: to remain at his laboratory long enough to acquire familiarity with his methods and results, and then to transfer the work to Washington, where the facilities were incomparably better. When he had been forced by concrete examples to the confession that his serologic methods were defective, I agreed that, after all, the outcome of virulent inoculation constituted the supreme test of whether an animal was immune to tuberculosis or not. Obviously I welcomed his offer to certify on the basis of his tests that a given animal was immune, and then turn the animal over to me for the final test of immunity. This offer he has never made good in spite of repeated requests. He later stated that he did not wish to do this because he wanted to have the opportunity of seeing the inoculations made, of knowing what cultures and amounts were used, and of seeing the results and autopsies. This attitude of unwillingness to permit a single detail of the investigation to transpire without his personal supervision he vigorously maintained at a conference with Dr. Anderson and myself, and I leave this fact to the judgment of scientific workers, for appraisal as to its bearing on his scientific standing. Later, when the demands of the service for some tangible evidence of the immunizing properties of his vaccine became more peremptory, he pleaded his inability to comply because all the animals he was able to obtain suffered from tuberculosis or pseudotuberculosis, which rendered them insusceptible of immunization. How then will he presume to immunize human beings, who are mostly infected at some period with tuberculosis? He calls on us to assume parallelism between the action of the vaccine in persons and guinea pigs. I excluded Dr. von Ruck and his assistants from all knowledge of my work (as far as I was able) only after it became clear to me that there were persons in his staff who were capable of falsifying records of his alleged scientific experiments.

2. The vaccine referred to by me as "an entirely new batch" I had observed in various stages of its manufacture. It was represented to me as such, and Dr. von Ruck refers to it in a letter of Oct. 11, 1914, as follows: "I am sending you 50 c.c. of the old vaccine made in 1911, and 50 c.c. of the new vaccine made last month." He used this vaccine in the treatment of human beings. I still believe it to have been a completely new batch of vaccine, and that Dr. von Ruck's objections are but a subterfuge to excuse an inefficient

1. This report is contained in Senate Document 641, 63rd Congress, 3rd Session. It may be obtained by applying to the Chairman, Senate Committee on Public Health and Quarantine.

preparation. At any rate it was the best he was able to prepare and was therefore the legitimate subject of investigation. His attempted limitation of this product to chemical studies was made by letter after the vaccine had been turned over to us for animal experimentation. The central question of this investigation is whether or not the preparations used by him on patients at the time of it conform to his claims, and not whether in the course of many attempts covering months or years he may be able to produce one which will do so.

We did not attempt to immunize animals with the vaccine sent us in May, 1914, because Dr. von Ruck had finally agreed to send us animals which he himself was to immunize with it. To overcome his difficulty with diseased animals, we sent him a shipment of guinea-pigs from our own healthy stock, which, however, he reported later had by accident been mixed with other animals, and found subsequently to be diseased.

That Dr. von Ruck could have no just basis for his claim of superiority for the vaccine supplied Oct. 24, 1914, is shown by his own words under date of October 3, "There is now no chance of finishing a satisfactory preparation of vaccine in the near future, and certainly not by the 23d of this month, the date when the limit of six months, set by the Hon. Mr. Newton, Assistant Secretary of the Treasury, expires." Nevertheless he did furnish vaccine by that date which he stated he believed to be superior to the vaccine previously supplied to the department. Since testing a vaccine by Dr. von Ruck's methods requires months of animal experimentation before its assumed potency can be determined, he could not possibly have such data for a vaccine just prepared. The assistant secretary therefore decided that this new vaccine was not properly the subject of investigation. Accordingly I was instructed to make no tests on it.

3. The printed directions regarding dosage for immunization were published six months after the experiments were begun. Dr. von Ruck's oral instructions, however, were faithfully followed. The dose of virulent bacilli, he told me, varied from 0.01 to 0.1 mg., according to virulence. My strain not being highly virulent, the larger amount was used. The average duration of life in control animals with this amount was ninety-six days, including a number of animals dying prematurely from complications. The printed directions recommend a strain causing death in about sixty days, so that my infecting dose was a reasonable one.

4. The serums used by me prior to May 15, 1914, were both supplied and tested by Dr. von Ruck, who personally sent for previously vaccinated persons to be brought to his laboratory, in order that I might obtain blood from them for examination. I never made surreptitious collections of serum, although I did not communicate my results after having reason to distrust the scientific honesty of his staff.

5. Serums sent from Asheville were carefully kept cold, and used as promptly as possible. I do not believe that deterioration accounts for the lack of antibodies in these serums, as good complement fixation has been repeatedly secured with serums sent from New Mexico. No specimen was intentionally omitted from examination and report.

The specific details of the shortcomings of Dr. von Ruck's records which I published in the Senate report show that my objections were based not on inference but on observation.

As far as I am aware, Dr. von Ruck never makes serologic tests himself. He relies on his assistants, although he occasionally inspects results. The following quotations from one of his letters to Dr. Anderson, explaining the inconsistency of his results, justify my belief that much of the work done at his laboratory was unscientific and unreliable. Referring to a former assistant who had performed tests for demonstration purposes during the visit of a certain government official, Dr. von Ruck says that in response to query as to the use of serum controls "he wrote confidentially that he made serum controls only when 'he wanted to show off' [*sic*] and that one of the occasions was the one referred to." Referring to one of his assistants who was at the laboratory at the time of the investigation, he says, "I cannot but believe that he purposely and wilfully deceived me, and persists in telling me what he knows is not true, namely, that he always used serum controls, unless in specimens received from a distance, and in which the amount of available serum was not enough." Again, "my inference that———[the same assistant] for some reason best known to himself deceived me, is I believe justified, until the contrary is proved. I find further, that the more precaution I demand, and the more I personally control the work, the more frequent are the failures, and that the 'uniformity' of successful work can had [*sic*] no foundation in fact. . . . I had the same troubles in London; we had but few 'clean cut' results, and am thus convinced, that the uniformity, shown by———prior to August, 1912, had no existence in fact and that if he had used serum controls as he persists in assuring me, he could not possibly have missed a like experience as is before me since that time."

The composition and use of the von Ruck vaccine are based to a great extent on complement fixation tests. Such tests without full controls are valueless.

If then, Dr. von Ruck has had such experiences with the tests and with his assistants, the validity of his results and of his records may well be questioned.

This investigation was undertaken without prejudice, and continued impartially. It is a matter of regret that in accordance with the facts, an adverse opinion had to be rendered.

A. M. STIMSON, M.D., Washington, D. C.
Assistant Director, Hygienic Laboratory.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

METOL DERMATITIS

To the Editor:—1. What is Metol developer used by photographers? 2. What are the symptoms and end result of Metol poisoning? 3. What is the best treatment?

E. M. STANSBURY, M.D., Vermilion, S. Dak.

ANSWER.—1. Metol is the trade name for methyl-para-amino-phenol sulphate.

2. It produces a dermatitis accompanied by ulceration which may result in fissures and cracks which are slow to heal.

3. There have been various recommendations for prophylaxis and treatment. Coating the hands with petrolatum before beginning development is a useful precaution. L. A. Freeman (*British Journal of Photography*, June 5, 1914) recommends that 2 drops of pure phenol (carbolic acid) be added to a quart of cold water. Immerse the hands in it after the use of Metol, and warm gently over a gas flame until the heat is no longer tolerable. Then wash thoroughly with carbolic soap, and dry well.

Before the skin is broken N. T. Beers (*New York Med. Jour.*, Sept. 10, 1908; abstr. THE JOURNAL, A. M. A., Sept. 26, 1908, p. 1107) recommends soothing applications such as lead lotion. After the skin is broken, care must be taken to protect the parts thoroughly and to use the blandest of applications. Zinc stearate with 1 or 2 per cent. of phenol or salicylic acid makes a useful dusting powder. In the later stages more stimulating applications may be used, such as small amounts of oil of cade or of resorcin or ichthyol.

The following ointment has been advised: ichthyol, resorcinol, glycerin, of each, 1 ounce; zinc oxid, ½ ounce; white petrolatum, 6 ounces (*Brit. Jour. Photog.*, Nov. 7, 1913, p. 860).

DIET IN TYPHOID FEVER

To the Editor:—Please give me a list of recent articles relative to the treatment of typhoid fever, with special reference to diet.

O. F. WELLENREITER, M.D., Gessie, Ind.

ANSWER.—The following is a list of articles on this subject:

Barker, L. F.: Diet in Typhoid Fever, THE JOURNAL, Sept. 12, 1914, p. 929.
Coleman, W.: Effects of Food on Metabolism in Typhoid Fever, THE JOURNAL, Sept. 12, 1914, p. 932.

Kenefick, M. J.: Increased Diet in Typhoid: Arguments for and Against, *Iowa State Med. Soc. Jour.*, April, 1913.
Graves, M. L.: Some Clinical Experiments in Treatment of Typhoid with Calorie Food Values, *Texas State Jour. Med.*, May, 1913; abstr., THE JOURNAL, May 24, 1913, p. 1668.
Cornwall, E. E.: Rational Diet for Typhoid, *Med. Rec.*, Oct. 3, 1914; abstr., THE JOURNAL, Oct. 17, 1914, p. 1425.
Bodenstab, W. H.: Typhoid Feeding, with Special Reference to High-Calory Diet, *Journal-Lancet*, Jan. 15, 1914.
Sicard, M. H.: High Calory Diet in Typhoid, *Med. Rec.*, March 22, 1913; abstr., THE JOURNAL, April 5, 1913, p. 1107.
Crohn, B. B.: Experiences with the Coleman-Shaffer Diet in Typhoid, THE JOURNAL, Jan. 27, 1912, p. 259.
Diet in Typhoid, editorial, THE JOURNAL, Feb. 3, 1912, p. 346.
Coleman, Warren: Five Years' Experience with the High Calory Diet in Typhoid, THE JOURNAL, Aug. 3, 1912, p. 363.
Howlett, K. S.: Diet in Typhoid, *Tenn. Med. Assn. Jour.*, Jan., 1912.
Coleman, Warren: High Calorie Diet in Typhoid—111 Cases, *Am. Jour. Med. Sc.*, January, 1912.
Garton, W. M.: New Diet in Typhoid, *Mil. Surg.*, March, 1912.
Rodgers, G. C.: General Diet in Typhoid, *Virginia Med. Semi-Monthly*, May, 1912.

APPARATUS FOR MOISTENING THE AIR—EFFECT OF DRY AIR ON RESPIRATORY DISEASES

To the Editor:—In the issue of January 2, you recommend for the prevention of colds that we should see that the air contains the proper amount of moisture.

1. Please inform me how the air in steam-heated rooms can best be moistened.
2. What is the best instrument to use to detect changes in humidity in rooms? What is its price, and where can it be purchased?
3. Please give references to the effects of dry air on the spread of respiratory disease. M. M.

ANSWER.—1. There are many types of humidifying apparatus. It is difficult to recommend any specific form unless the conditions of operation are precisely known. A very simple and often effective means of adding moisture in steam-heated rooms is to let some of the steam from the radiator pass directly into the room atmosphere.

2. The Committee of the American Public Health Association on Standard Methods for the Examination of Air (*Am. Jour. Pub. Hyg.*, 1910, xx, 346) recommends the sling psychrometer, used by the United States Weather Bureau. This apparatus consists of two mercurial thermometers fixed to an aluminum back and mounted by a handle, by which they can be whirled. Full directions for its use are printed in Bulletin 235 of the United States Weather Bureau. The instrument may be obtained from Schneider Brothers of New York or from Queen and Company.

3. Much less is known about the problem of humidity in ventilation than about that of temperature. A sound physiologic foundation for artificial humidification is still lacking. Experiments being carried out by the New York Ventilation Commission may throw some light on this matter. A paper by Clark and Gage, dealing with certain features of this subject and entitled "A Study of the Hygienic Condition of the Air in Certain Textile Mills with Reference to the Influence of Artificial Humidification" appeared in the *American Journal of Public Health*, 1913, iii, 1176.

THE HARRISON ANTINARCOTIC LAW

To the Editor:—1. May a physician without formally registering with the Collector of Internal Revenue, dispense a cough mixture containing more than ⅛ gr. of heroin to the ounce after March 1 next?

2. If registered as above is it necessary to keep a formal record of same more than his regular office memorandum?

3. May a physician who has not formally registered, write a prescription for above?

4. Is it necessary to keep a formal record of such prescription? F. R. F.

ANSWER.—1. Section 6 of the law provides that the provisions of the act shall not be construed to apply to the sale, distribution, giving away, dispensing or possession of preparations which do not contain more than . . . ⅛ of a grain of heroin in one fluidounce, etc. Obviously any mixture containing more than ⅛ of a grain of heroin to the fluidounce would not be exempt. A prescription for such a preparation must therefore be signed by a physician "registered under the act."

2. The second question is ambiguous. Registered physicians are required to keep a record only of preparations which they dispense. They are not required to keep a record of prescriptions.

3. Unregistered physicians could write prescriptions for a cough mixture containing more than ⅛ grain of heroin, but a druggist could not fill it.

4. Physicians are not required to keep a record of prescriptions but only of preparations which they dispense. Druggists must keep record of prescriptions subject to inspection.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

MAINE: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

MASSACHUSETTS: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MISSOURI: St. Louis, March 22-24. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Missouri September Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports the oral and written examination held at Kansas City, Sept. 28-30, 1914. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 41, of whom 35 passed and 6 failed. The following colleges were represented:

College	Year Grad.	Total No. Examined
PASSED		
Bennett Medical College	(1914)	1
Chicago College of Medicine and Surgery	(1914)	2
Northwestern University	(1914)	1
University of Illinois	(1914)	1
Louisville and Hospital Medical College	(1908)	1
Louisville Medical College	(1896)	1
American Medical College	(1914)	8
Barnes Medical College	(1910)	1
Ensworth Medical College	(1914)	1
Kansas City Hahnemann Medical College	(1903,1) (1912,1)	2
Marion-Sims-Beaumont Medical College	(1902)	1
St. Louis College of Physicians and Surgeons	(1914)	6
St. Louis University	(1914)	1
University of Oklahoma	(1914)	2
Jefferson Medical College	(1906)	1
Meharry Medical College	(1914)	3
Vanderbilt University	(1914)	1
Royal University of Pavia, Italy	(1910)	1
FAILED		
American Medical College	(1914)	2
St. Louis College of Physicians and Surgs.	(1912,1) (1914,2)	3
University of West Tennessee	(1914)	1

New Mexico October Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports that thirteen candidates were licensed on presentation of satisfactory credentials at the meeting held at Santa Fé, Oct. 12-13, 1914. The following colleges were represented:

College	Year Grad.	Total No. Licensed
College of Physicians and Surgeons, Chicago	(1910)	1
College of Physicians and Surgeons, Kansas City, Kan.	(1898)	1
University of Louisville	(1907)	1
Barnes Medical College	(1899)	2
University Medical College, Kansas City	(1911)	1
Washington University	(1909)	1
Cincinnati College of Medicine and Surgery	(1884)	1
Western Reserve University	(1909)	1
University of Nashville and Tennessee	(1911)	1
Vanderbilt University	(1909) (1912)	2
Syrian Protestant College, Beirut	(1912)	1

Connecticut Homeopathic November Report

Dr. E. C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, Nov. 10-11, 1914. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. Two candidates were examined and passed. One candidate was licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Boston University	(1914)	89
Hahnemann Medical College of Philadelphia	(1913)	82

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
New York Homeo. Med. Coll. and Flower Hospital	(1897)	New York

Book Notices

SYMPTOMATOLOGY, PSYCHOGNOSIS AND DIAGNOSIS OF PSYCHOPATHIC DISEASES. By Boris Sidis, A.M., Ph.D., M.D., Medical Director of the Sidis Psychotherapeutic Institute. Cloth. Price, $2.50 net. Pp. 448. Boston: Richard C. Badger, 1914.

To the various new procedures in the study of the psychology of abnormal mental states is undoubtedly due the large amount of recent literature concerning this subject. Medical colleges are beginning to awaken to the new interest in psychiatry, and in general the courses, which previously were hardly up to the standard of other departments, have begun to broaden out in such a manner as really to cover psychopathic diseases. "To one case of insanity," says Sidis, "there are thousands of cases of functional neurosis and psychopathic affections which have absolutely nothing to do with insanity, affections which the psychiatrist, from the very nature of his training, is neither in a condition to grasp nor able to deal with." In the introduction Sidis discusses the recent intense interest in psychanalysis, and attacks fiercely the Freudian school. He says, "The sight of some medical dignitaries taking a regular bath in sexual filth, possibly as a matter of redemption and expiation, would be ludicrous, if it were not so pathetic. . . . Psychoanalysis is a form of medical bacchanalia. . . . Psychoanalysis is a sheer humbug." The book is divided into three parts, one including subconscious states and borderland phenomena, the second, psychopathic diseases, and the third psychognosis and diagnosis. By psychognosis the author means the complete detailed study which will enable the observer to obtain a working knowledge of the patient's soul. This embodies the use of all the available best methods. The sanatorium treatment is evidently included, for he says, "It is best to live with the patient. . . ." A few of the chapters have appeared previously in periodical publications. There is a wealth of information and a thorough discussion of dissociation and hypnoidal states, on which Sidis' views are authoritative. In a number of appendixes are given methods of examination for the various disease states considered, "The Hypnoidal State" of Sidis discussed by T. W. Mitchell, and two other interesting essays somewhat apart. The work is interesting and worthy of thorough consideration by those who are attempting to keep abreast in this rapidly advancing field.

THE VACCINATION QUESTION IN THE LIGHT OF MODERN EXPERIENCE. An Appeal for Reconsideration. By C. Killick Millard, M.D., D.Sc., Medical Officer of Health for Leicester. Cloth. Price, 6 shillings net. Pp. 243, with 10 illustrations. London: H. K. Lewis, 1914.

The author makes a serious effort to review the vaccination situation in England in the light of experience gained in recent years, and to determine whether or not compulsory vaccination, especially compulsory infantile vaccination, is necessary or advisable under present conditions. He believes absolutely in vaccination for the protection of the individual against small-pox, especially in those exposed to infection. He questions the value "to the community" under present-day conditions of infantile vaccination, holding that sanitation has played a much more important part in the prevention of small-pox in the last forty years than has infantile vaccination. He declares that the dangers of infantile vaccination and the injuries to health caused by it are not sufficiently appreciated by physicians, and that there is definite evidence that small-pox is disappearing in spite of the increasing neglect of vaccination. He asserts that the greatest difficulty in controlling small-pox to-day is the mild unrecognized cases found chiefly (?) among persons vaccinated in infancy, and because they were so vaccinated. From this basis he argues that infantile vaccination has a distinct tendency to encourage the spread of small-pox. His arguments, which really bear only on conditions in England, are based on an analysis of the mortality records of England for the past 150 years, and on his own experience as health officer in Leicester.

Medicolegal

Negligence and the Use of Unsterilized Instruments

(Rogers vs. Tegarden Packing Co. (Mo.), 170 S. W. R., 675)

The Springfield (Mo.) Court of Appeals, in discussing the nature of negligence, says that the latter has been defined as being the failure to exercise that degree of care which ordinarily prudent persons are accustomed to exercise under like circumstances. Negligence is purely a relative term, and depends on the facts of the particular case. A certain act is to be done, and two ways are open for performance, one as much at hand and within the grasp of the actor as the other. One way, by the very nature of the circumstances, is more hazardous and dangerous than the other. By voluntarily following one method an injury may be reasonably and naturally anticipated. By using the other method the act can be performed in safety. In such a case, a court would be called on to say which method reason and prudence and ordinary care would dictate. As an illustration: A surgeon is called to attend an injured man, and an immediate operation is imperative. The only instrument at hand is one that shows it has not been sterilized, from which fact he must know that to use it may infect the patient and cause blood poisoning. He must use it in that condition or not at all. He does use it and blood poisoning follows. His course is questioned. To determine whether he was negligent in using such an instrument, it must be ascertained whether, under the circumstances, he used such care as a reasonably careful surgeon would have exercised, or whether the apparent condition of the instrument rendered its use so dangerous that no prudent surgeon would have taken the chances of operating with it. Now, suppose there were at his hand not only this instrument, but another which showed that it was properly sterilized, and the surgeon had the choice between them, and chose the unsterilized instrument. His conduct would then be measured by a determination of which instrument an ordinarily prudent surgeon would have used. While it cannot be laid down as a set rule that ordinary prudence requires every act to be done in the safest way, yet in determining whether the way it was done meets the requirement as to the exercise of ordinary care, either as a question of law or one of fact, there must be taken into consideration the circumstances surrounding the occurrence of an injury sustained in doing the act.

Power of Local Bodies to Require Vaccination of Schoolchildren

(Zucht vs. San Antonio School Board (Tex.), 170 S. W. R., 840)

The Court of Civil Appeals of Texas affirms a judgment in favor of the defendant in this suit to compel it to permit the plaintiff's children to attend the public schools of the district without vaccination. The court says that the power of local bodies to require the vaccination of schoolchildren as a condition to their admission to public schools, in the absence of express authority, is dependent on the conditions existing in the community with reference to small-pox. When an epidemic exists, or is imminent, there can be no doubt that the power may be exercised. It has also been held that such regulations may be adopted and enforced when small-pox exists in a community, and by some courts the expression is used that such regulations may be adopted when an epidemic is reasonably apprehended. In this case it was found that no epidemic existed or was imminent, but that the existing conditions with reference to small-pox constituted a menace to the public health. The court concludes from its investigation of the authorities that it is not necessary for an epidemic to exist or be imminent in order for the school board to be justified in adopting and enforcing the regulation complained of, because, if the conditions are such that they constitute a menace to the public health, it cannot be said that the board's action was unreasonable and that the want of necessity for the measures has been shown to be clear, manifest and undoubted. If existing conditions constitute a menace

to the public health, an epidemic is threatened, and it cannot be said that it did not reasonably appear to the board to be necessary to adopt the regulation.

The court cannot agree with the contention that, as the regulation in question did not provide when it was to expire, it was permanent and to be enforced whether or not conditions justified it, and that it was therefore void. Ordinances and regulations which are valid when measured by existing conditions become unenforceable when such conditions cease. They need not provide the time when they shall cease to be in effect or that they shall expire when certain conditions change.

Nor was the regulation unreasonable and void because it provided that a child or teacher who brought a certificate from a physician to the effect that the health of the teacher or child was such that vaccination should not be done, could be admitted for sixty days without vaccination if the school physician so recommended, and should the child at the end of said time produce another such certificate, then that the question be referred to the board of health of the city together with the school physician to determine whether and how long the child might attend the schools without vaccination. This was attacked on the ground that the question of admission was first left to the arbitrary discretion of the school physician, and ultimately to said physician and the board of health of the city. But the court will not assume that the power will be exercised arbitrarily, nor should the regulation be construed as authorizing such an exercise thereof, for it is apparent that all decisions with respect to the matter are to be based on the physical condition of the child, and the power is placed in the hands of persons competent to investigate and make a decision which will not be arbitrary.

If the school board can keep out children afflicted with contagious diseases and those who have been exposed to the contagion, without coming into conflict with the state constitution and statutes, it also has the power to keep out those who fail to comply with other regulations reasonably necessary to protect the health of those attending the schools.

Society Proceedings

NEW YORK ACADEMY OF MEDICINE

Meeting held Dec. 17, 1914

The President, DR. WILLIAM M. POLK, in the Chair

Blood Transfusion

DRS. R. OTTENBERG and E. LIBMAN: We have studied 212 transfusions in 189 cases at the Mount Sinai Hospital. Of these, eighty-five cases, or 45 per cent., were successful in that the condition of the patient was greatly improved, and forty-two of these, or 20 per cent. of the whole number, were actually life-saving.

Successful Cases (85): 1. Cases in which prognosis was extremely bad, and transfusion saved life (42): (*a*) cases which subsequently completely recovered (*29*); (*b*) cases in which the original underlying disease continued (13). 2. Cases with recovery, in which prognosis before transfusion was not desperate (43).

Unsuccessful Cases (104): 1. Cases in which there was temporary improvement following transfusion, with death later from continuation of the original disease. 2. Cases with death from some disease necessarily fatal and in which transfusion could not have been expected to do much good. 3. Cases in which transfusion did little or no good, although from the nature of the disease a good result might have been possible.

The most interesting cases were those in which the transfusion was life-saving. These were almost all cases of hemorrhage either from operation, disease or hemorrhagic diathesis. Some of them were cases of grave chronic anemia or poisoning.

Indications for transfusion: 1. Transfusion for simple hemorrhage: (*a*) gastric and duodenal ulcer; (*b*) dysentery; (*c*) typhoid hemorrhage; (*d*) ectopic pregnancy.

2. Transfusions in connection with surgical operations: (*a*) preliminary to operation; (*b*) for postoperative hemorrhage; (*c*) for shock.

3. Transfusions for the cure of hemorrhagic conditions: (*a*) purpura hemorrhagica; (*b*) hemophilia; (*c*) hemorrhages secondary to: (1) blood diseases; (2) severe infectious disease; (3) jaundice (cholemia).

4. Transfusions for blood diseases: (*a*) pernicious anemia; (*b*) leukemia.

5. Transfusions for infections: (*a*) infections with pyogenic organisms; (*b*) infective endocarditis.

6. Transfusions for intoxications: (*a*) acute poisoning; (*b*) diabetic coma.

7. Transfusions for debilitated conditions: (*a*) cancer; (*b*) malnutrition; (*c*) simple anemia.

In the cases of hemorrhage from gastric or duodenal ulcer the results were exceedingly good; although all of the patients were in a desperate condition at the time of the transfusion, twelve of the fourteen recovered. In dysentery, on the other hand, the results were rather poor. In typhoid fever the results were exceedingly encouraging. Among seven transfusions, four were successful in relieving the immediate symptoms of hemorrhage. In the three cases of ectopic pregnancy, transfusion was life-saving. Among the most satisfactory transfusions in the whole series were some done preliminary to operation in patients whose condition would otherwise have contra-indicated any other operation. There were twenty-three such preoperative transfusions, and in thirteen of them the result was decisive and the patients recovered. In shock the results were very disappointing. We believe, however, that if shock could have been foreseen, so that the transfusion could have been done immediately instead of after several hour's delay in obtaining a donor, the results might have been better. The best results in all the series of cases were those in the group of hemorrhagic conditions. Of the nine patients with purpura hemorrhagica, six recovered completely and one left the hospital improved. In five of the six cases of hemophilia treated, the hemorrhage stopped promptly, and the coagulating property of the blood became practically normal. We suggest as a prophylactic treatment for hemophilia that every individual known to have hemophilia ought to have at his command several persons whose blood, by previous tests, is known to be compatible with his own. Whenever serious hemorrhage occurs, prompt transfusion should be done. In almost all of the thirty-five cases which had been transfused for hemorrhagic disease, the serum treatment had been tried out thoroughly before the transfusion and had had no effect; we believe, however, that the serum treatment deserves a further trial. In cholemic hemorrhage the results were rather disappointing; only one of the seven patients recovered. In regard to pernicious anemia, and our study embraced twenty-four cases, transfusion is the best remedy, and though it never cures, it leads to remission in about half the cases. If the first transfusion fails to bring about remission, one should be tried from a different donor. Splenectomy in pernicious anemia has about the same effect as transfusion. This should be reserved as a final method of producing remission when transfusion will no longer do so. In myelogenous leukemia and acute lymphatic leukemia, transfusion was without effect, but in four of the five cases of chronic lymphatic leukemia, transfusion was followed by a remarkable remission in which the blood picture returned temporarily to the normal. The ultimate outcome of course was not affected. In bacterial infections, transfusion is of value only in so far as it restores the general resistance of the patient. In gas poisoning, transfusion is almost a specific treatment and should be accompanied by phlebotomy. In diabetic coma it is useless.

Treatment of Pernicious Anemia by Transfusion

DR. E. LINDEMAN: The results of transfusion are often brilliant, sometimes only temporary, and sometimes indif-

ferent and even poor; in my opinion, this variable response is due in part to the extent and seat of the pathologic invasion and, in some cases, to the incompatibility of the blood introduced. Splenectomy in pernicious anemia was not an accidental thought, but was arrived at through laborious study and logical reasoning. About thirty-five cases of splenectomy have been reported. I have had under observation six cases of splenectomy with transfusion for pernicious anemia. From a close study of these and about thirty other cases I conclude as follows: 1. Splenectomy plays an important part in the course of events in this disease. 2. The removal of the spleen reduces the blood destruction. 3. The extreme blood crises do not occur after splenectomy. 4. Splenectomy does not cure the disease; the patients still maintain the blood picture of a primary anemia, though clinically normal. 5. Considering the course of the disease, the procedure is entirely justifiable. 6. Cases should be selected carefully, and those showing petechiae, hemorrhage, mental disturbances and marked cord disturbances should be considered unfavorable to this procedure. Cases in which the vital staining cannot be demonstrated belong to the unfavorable group. 7. The patient should be transfused before splenectomy, and he must not be allowed to make the blood himself. In many cases he cannot; but even if he can, he should not be permitted to do so. By blood transfusion, the bone-marrow function is conserved for the vital need of the patient in the future.

DR. MORRIS MANGES: Five or six years hence the field for transfusion will be larger. The failures which have been reported so candidly are small when compared with the striking results obtained by transfusion. I have never seen a case in which transfusion was done as in one case of typhoid fever in which the primary attack lasted seventy-eight days. Without the transfusion, this case would have been shorter and fatal. The first transfusion was done on the thirty-eighth day, when the patient had a third hemorrhage and was in a desperate condition. The transfusion checked the hemorrhage, and the patient went on with the disease. On the sixty-sixth day the blood culture showed that typhoid bacilli were still present, and the condition of the patient was as bad as could be conceived, and petechiae were abundant. A second transfusion was done, and within six days the patient was convalescent.

DR. WILLY MEYER: I have performed transfusion in two cases of pernicious anemia with marked temporary improvement. Perhaps the lives of both patients might have been saved had splenectomy been added and the transfusion continued. I wish to say a good word for the subcutaneous injection of human blood serum in hemophiliacs and in patients suffering from chronic jaundice. In both, the secondary parenchymatous hemorrhage can often be well overcome by prophylactic and repeated injections of the serum. I wish to emphasize the necessity of the injections before operation. This kind of preparation is simpler than transfusion. However, transfusion is preferable in case the patient is also rather anemic.

DR. EUGENE H. POOL: I have adopted this method in ten cases without much difficulty. The method is valuable in cases of hemorrhage with jaundice; in this condition it might be well to use it as a prophylactic measure. It is also of value as an anteoperative procedure in cases of extreme anemia.

DR. WILLIAM A. DOWNES: In regard to splenectomy plus transfusion in pernicious anemia, five of the patients whose histories were given were transfused by Dr. Lindeman and later splenectomized by me. Two were of the type in which there were marked cerebral symptoms, and they should not have been operated on. There was a continuation of the symptoms, and death in both cases in from two to three weeks. The other three have done remarkably well, and while a cure could not be claimed, it did seem that splenectomy with transfusion both before and after operation offered more in this disease than any treatment yet proposed.

DR. LOUIS HAUSWIRTH: Remissions in this disease are just as long after transfusion in pernicious anemia as after splenectomy.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

January, CXLIX, No. 1, pp. 1-156

1 *Abnormalities of Endocrine Functions of Gonads in Male. L. F. Barker, Baltimore.
2 *Syphilitic Nephritis. A. Stengel and J. H. Austin, Philadelphia.
3 Infectious Diarrhea. J. L. Morse, Boston.
4 *Damage Done by Pyelography. E. L. Keyes, Jr., and H. Mohan, New York.
5 Results and Interpretation of Wassermann Test. C. F. Craig, U. S. Army.
6 Analgesia and Anesthesia in Labor. E. P. Davis, Philadelphia.
7 Functional Heart-Block. Report of Three Cases. T. S. Hart, New York.
8 *Aconite as Vasodilator. W. H. Thomson, New York.
9 When and How To Use Tuberculin Preparations in Private Practice. S. S. Cohen, Philadelphia.
10 *Eczematoid Ringworm, Particularly of Hands and Feet. M. B. Hartzell, Philadelphia.
11 *Aortic Aneurysm with Recurrent Fever. A. McPhedran, Toronto, Canada.
12 Early Diagnosis of Spinal Cord Tumors. J. Collins and H. E. Marks, New York.

1. **Endocrine Functions of Gonads in Males.**—More and more, Barker says, are we forced to realize that the general form and the external appearance of the human body depend to a large extent on the functioning, during the early developmental period (and later) of the endocrine glands. Our stature, the kinds of faces we have, the length of our arms and legs, the shape of the pelvis, the color and consistency of our integument, the quantity and regional location of our subcutaneous fat, the amount and distribution of hair on our bodies, the tonicity of our muscles, the sound of the voice and the size of the larynx, the emotions to which our *exterieur* gives expression — all are to a certain extent conditioned by the productivity of our hormonopoietic glands. We are simultaneously, in a sense, the beneficiaries and the victims of the chemical correlations of our endocrine organs. More than ever before, is the minute examination of the external appearance of the body—the habitus—of significance for the practicing physician who desires to make accurate diagnoses.

2. **Syphilitic Nephritis.**—The clinical significance of the appearance of doubly refractile lipoids in the urine, and especially their possible relation to a syphilitic nephritis, led Stengel and Austin to examine the urine fifty-eight times in forty-six cases, with a polarizing microscope. Of these 46 cases, 23 patients showed nephritis with an abundance of albumin and casts in the urine. Of these 23, 6 had positive Wassermann, 3 had strong presumptive evidence of syphilis but not positive Wassermann, 14 had not the slightest evidence of syphilis. The 6 patients with positive Wassermann all showed lipoids in the urine, whereas of the 14 non-syphilitic cases only 5 patients showed lipoids in the urine. The rest of the 46 cases studied were made up in part of cases of nephritis of the interstitial or arteriosclerotic types, with only traces of albumin in the urine and a few hyaline and granular casts, in some cases in which syphilis was present and in some in which it was not, in part, of syphilitic cases in which there was no nephritis and, in part, of control cases showing neither syphilis nor nephritis. None of these cases showed lipoids in the urine. One of the 6 syphilitic patients with nephritis showing lipoids in the urine, had not received any mercury.

Stengel and Austin believe that the evidence suggests that there exists a parenchymatous type of nephritis due to syphilis, characterized by an abundant albuminuria, with many hyaline, granular, and occasionally epithelial casts, with a tendency to produce edema of renal distribution. This is associated, as a rule, with a moderate reduction of phenolsulphonephthalein output and exhibits an almost constant tendency to the presence of doubly refractile lipoid globules varying in size from that of an erythrocyte to globules three or four times this diameter, seen sometimes floating free in

the urine but not rarely as a constituent of a compound granular cell or possibly on an epithelial cast. On the other hand, similar lipoid globules may be found in severe acute or chronic parenchymatous nephritis of other etiology, but in only a minority of cases. Of further interest is the fact that in 66 out of the last 84 cases of nephritis, there could be recognized from the histories, such possible etiologic influence as infections, lead, alcohol, excessive work, exposure, senility, etc.; but in 18 cases no such factors could be determined. Of these 18 cases, there existed in 8 either an unquestionable history of syphilis or a positive Wassermann or both; in 6 more of these cases no Wassermann had been secured; while in 4 syphilis was definitely excluded.

4. **Damage Done by Pyelography.**—Experiments on dogs made by Keyes and Mohan showed that momentary gentle distention of the normal pelvis of the kidney doubtless causes no more damage than a congestion of the organ, doubtless of brief duration; but if the distention persists for a few minutes the injected fluid is absorbed into the blood-vessels and lymph-spaces about the kidney pelvis. Although, like Strassmann, the authors have been unable to detect any collargol forced into the collecting tubules, they found collargol in the glomeruli and in the convoluted tubules. As there was much less collargol within the glomeruli and tubules than in the lymph-spaces and vessels, they conclude that the appearance of the collargol within the glomeruli and tubules is a secretory phenomenon.

In actual practice a secondary infiltration due to renal retention following the examination must be considered. The secondary distention is of far greater importance than the primary retention at the time of injection. It is the cause of most of the deaths that have been reported from pyelography. The cause of infiltration in these cases is ureteral obstruction. Hence, it may occur when there has been no primary distention. Alarming symptoms following pyelography are to be relieved by immediate drainage of the kidney or nephrectomy. The presence of collargol in the kidney parenchyma should not be a cause of apprehension, though it shows that the injection has been made with too much force. The collargol may enter the general circulation and be distributed to the other kidney and elsewhere, in some instances at least, and yet no great harm results.

8. **Aconite as Vasodilator.**—After an experience of years in its use for this purpose, Thomson regards aconite as the most efficacious vasodilator when given systematically in full doses. Aconite thus administered at once reduces blood pressure, produces a full and compressible pulse, and greatly increases the percentage of the elimination of urea in interstitial nephritis.

10. **Eczematoid Ring-Worm.**—Hartzell has found the ointment suggested by Whitfield, which contains 3 per cent. of salicylic acid with 5 per cent. of benzoic acid, most effective; but, he says, it cannot be used, as Whitfield has pointed out, without some degree of caution in markedly inflammatory cases, as it occasionally produces considerable irritation.

11. **Aortic Aneurysm With Recurrent Fever.**—Five or six weeks before entering the hospital, McPhedran's patient, a woman 36 years of age, of bad habits, is said to have been kicked below the right scapula. She complained of pain in this part, and she was troubled with nausea and vomiting. Over the part there was dulness, and the breathing sounds were weak. There were 13,500 leukocytes per centimeter, the increase being in the polymorphonuclear cells. Her temperature was 104 F. She did not appear seriously ill; with the fall of temperature the leukocytes returned to normal and remained so even in the recurrent attacks of fever. The signs in the chest grew gradually less marked and the pain ceased. In the general examination of the chest signs of dilated aorta were found. The Wassermann test gave a marked reaction.

She was kept five weeks under observation in order to note the natural course of the fever—it showed little if any improvement. Then mercurial inunctions were used and potassium iodid given. There was only one sharp rise of temperature after that, but slight, somewhat irregular fever persisted, and six weeks later salvarsan was resorted to. A first intravenous injection of 0.3 gm. was given. There was no reaction. Eight days later 0.6 gm. was given, still without reaction. A similar dose was given eight days later, followed by a slight short reaction, the temperature rising to 100 F., but falling to normal and remaining so. A fourth dose was given after ten days, and the reaction was rather sharp, the temperature reached 102.5 F., but again fell and remained normal. Thirteen days later the last injection was given; the reaction was less; temperature, 101.5 F. After that the temperature remained normal while in the hospital—six weeks—and her general health improved very much, but there was no change apparent in the state of the aorta or the aneurysm, and the Wassermann reaction was quite as marked.

Annals of Surgery, Philadelphia

January, LXI, No. 1, pp. 1-128

13 Cancer Problem. C. M. Moullin, London.
14 Influence of Inhalation Anesthesia on Acidity of Blood. G. W. Crile, Cleveland.
15 Structure of Encephalocystocele. C. Savini, New York.
16 Cerebral Surgery. J. H. Kenyon, New York.
17 Laryngeal Diverticula; Report of Cases. G. E. Shambaugh and D. Lewis, Chicago.
18 *Roentgenologic Diagnosis of Surgical Lesions of Stomach and Duodenum. G. E. Brewer and L. G. Cole, New York.
19 Persistent Embryonal Type of Large Intestine. H. B. Delatour, Brooklyn.
20 Fracture of Tip of Internal Condyle of Femur. M. G. Sturgis, Seattle, Wash.
21 Joint Mouse. L. W. Ely, San Francisco.
22 *Keloid Formation in Negro. A. G. Brenizer, Charlotte, N. C.
23 Fixation of Simple Fractures. J. O'Conor, Buenos Ayres.
24 *Tendon Fixation for Deformity Resulting from Partial Paralysis. W. E. Gallie, Toronto, Ont.
25 Blood-Vessel Clamps of Practical Utility. B. M. Bernheim, Baltimore.

18. **Roentgen Diagnosis of Stomach and Duodenum Lesions.**—The interpretation of the roentgenograms and the diagnosis of the 27 consecutive cases described in this communication are the result of a study of about 20,000 roentgenograms in 700 cases. The 27 cases reported include all cases examined roentgenographically by Cole and subsequently operated on by Brewer. Each case was referred to Cole with the simple statement that an organic lesion of the stomach or duodenum was suspected; no history or data obtained by physical examination or gastric analysis being furnished. As a result of the roentgenographic examination, a typewritten report was returned, giving the exact findings and an opinion regarding the presence or absence of a gastric or duodenal lesion, its location, extent and probable cause. In several cases a lesion of some other portion of the gastro-intestinal tract was diagnosticated. Later each case was explored, and the findings at operation were recorded.

Of the 22 cases in which a definite diagnosis was made by the Roentgen method subsequent operation proved that in 20 instances this diagnosis was correct, and in 2 it was incorrect. In 11 of these cases the diagnosis was negative as to the presence of a gastric or duodenal lesion, although the clinical history so strongly suggested ulcer or carcinoma as to justify exploratory operation. In not one of these cases was an organic lesion found to exist. In the five instances in which the roentgenologic diagnosis was not definitely stated, owing to incomplete observation or unusual findings which could not be definitely interpreted, and concerning which only an opinion was expressed as to the probable lesion present, the opinion proved to be correct in four instances and incorrect in one instance. In other words, in this particular series, a correct diagnosis was made by serial roentgenography in 89 per cent. of the cases.

22. **Keloid Formation in Negro.**—Brenizer states that the negro is much more susceptible to all connective-tissue tumors than the white man, about 2 to 1. The negro at birth shows many gross congenital malformations and, on the dissecting table, many anomalies of blood vessels and nerve

formations confuse the student as he follows his text-book guide. These perverted structural conditions point to an instability in the equilibrium of growth. There must be some disturbance of an inhibitory influence which holds the growth of the cells in check and prevents their growth at random. If the abnormal growth of cells is due to an injury of an inhibitory substance, this substance must be injured before the cells can grow. This inhibitory substance is then more sensitive than the cells themselves. If we possess evidence of a much greater preponderance of abnormalities of growth and tumor formation in the negro than in the white man, we may know that this inhibitory substance is weaker and more unstable than in the white man. Therefore, irritation which might pass without a demonstrable effect in the white man, might so injure this inhibitory substance in the negro as to allow an overgrowth of the dermal connective-tissue cells and the formation of a fibroma, a keloid.

24. **Tendon Fixation for Deformity.**—In the case cited by Gallie, that of a boy, 5 years of age, the calf muscle seemed to have about one-quarter of the normal power, the tibialis posticus no power at all, and the peronei, tibialis anticus, dorsi flexors and plantar flexors of the toes about normal power. The result was a moderate calcaneovalgus, the patient walking entirely on the heel and with considerable valgus, apparently making no use of the power still persisting in the calf. The following operation was done: A vertical incision 5 inches long was made along the outer side of the tendo achillis, down to the posterior extremity of the os calcis. The sheath of the tendo achillis was split throughout the length of the incision and the tendon exposed. The tendon was then split into an anterior and a posterior half from the upper end of the incision down to the os calcis. At the upper end of this incision the anterior half of the tendon was then cut free from the muscle. Close to the insertion of the tendon a small opening was made in the anterior portion of its sheath and the cut end of the half tendon drawn through it so that it was now entirely anterior to the sheath. The posterior surface of the tibia was then exposed by retraction of the flexor longus hallucis and the periosteum divided vertically for 3 inches, down to the lower end of the bone. After reflecting the periosteum sufficiently, a piece of bone, 3 inches long and of the thickness of the half tendon, was removed with a gouge and the tendon laid in the trough thus prepared. When this tendon had been drawn sufficiently taut to produce a slight equinus, it was sewn solidly in place with kangaroo tendon and catgut and completely covered with periosteum. Thus, passive or active dorsiflexion of the foot beyond a slight obtuse angle was made impossible.

The peronei tendons were then transplanted into the os calcis and, finally, a fixation was done on the tibialis posticus tendon to prevent the valgus deformity, the tendon being buried in the internal malleolus. After two months the fixations were quite solid and the peroneal transplantation successful. The part of the tendo achillis still attached to the muscle had regained its normal thickness so far as one could tell. The point of greatest interest, however, was that while dorsiflexion beyond a slight obtuse angle was impossible the patient was able to plantar-flex the foot strongly by the combined action of the calf muscle and the transplanted peronei. Thus the deformity and disability were overcome without interference with the power present. With the assistance of a Whitman plate the patient walks nearly normally.

Archives of Ophthalmology, New Rochelle, N. Y.

January, XLIV, No. 1, pp. 1-108

26 One Hundred Successive Extractions of Cataract in Capsule After Subluxation with Capsule Forceps. A. Knapp, New York.
27 Purulent Meningitis Following Penetration of Eyeball by Fish-Hook. C. A. Veasey, Spokane, Wash.
28 Loss of Vitreous in Intrascapular Cataract Operation and Its Prevention. W. A. Fisher, Chicago.
29 Ophthalmoplegia Interna, Result of Lead Poisoning. L. D. Brose, Evansville, Ind.
30 Removal of Eyeball. Exenteration Versus Enucleation. H. S. Gradle, Chicago.
31 Epibulbar Sarcoma with Microscopic and Macroscopic Sections. L. W. Crigler, New York.
32 Two Cases Showing Effect of Syphilis on Injury of Eye. H. H. Stark, El Paso, Tex.
33 Decompression Operations in Diseases of Optic Nerves. A. Bednarski, Lemberg.
34 Idiopathic Iridocyclitis and Sympathetic Ophthalmia. W. Brock, Stuttgart.

Arkansas State Medical Society Journal, Little Rock

January, XI, No. 8, pp. 179-205

35 What Laity and Doctor Should Know About Tuberculosis, and Why. S. E. Thompson, Carlsbad, Tex.
36 Pellagra. H. Thibault, Scott.
37 Medical Examination for Life Insurance. D. Smith, Hope.
38 Corneal Ulcers. D. R. Dorente, Fort Smith.
39 Thoughts Inspired Along Highway of Mississippi County Medical Society. T. F. Hudson, Luxora.

Boston Medical and Surgical Journal

January 28, CLXXII,, No. 4, pp. 121-160

40 Scholarship in Medicine. T. Smith, Boston.
41 Study of Normal-Looking Brains in Psychopathic Subjects. E. E. Southard and M. M. Canavan, Boston.
42 Emergencies of Extra-Uterine Pregnancy at Boston City Hospital. Analysis of Sixty-Two Cases. E. B. Young, Boston.
43 *Lymphatic Leukemia in Acute Infection, After Removal of Spleen. J. M. Jackson and W. D. Smith, Boston.
44 Submucous Resection as Means of Obliterating Superficial Blood-Vessels. J. Prenn, Boston.

43. **Lymphatic Leukemia in Acute Infection After Removal of Spleen.**—Jackson and Smith cite the case of a young man who, a few weeks after removal of the spleen in 1909, showed an essentially normal blood picture. In 1913 he developed what seemed clinically an acute tonsillar infection; this was quickly followed by marked enlargement of the glands of the neck and moderate general glandular enlargement involving axillary, inguinal and epitrochlear glands. This situation was accompanied by a blood picture so typical of lymphatic leukemia that no other diagnosis seemed possible. After a week of sore-throat, general malaise and moderate elevation of temperature the symptoms abated and a normal convalescence as from an acute infection ensued. Blood examinations done from time to time showed a gradual diminution in the white count and a change in the blood picture from that of a typical lymphatic leukemia on June 3, 1913, to an approximately normal picture on Aug. 23, 1913, and a normal picture on April 15, 1914.

Bulletin of Johns Hopkins Hospital, Baltimore

January, XXVI, No. 287, pp. 1-36

45 *Clinical and Experimental Studies on Injection of Alcohol into Gasserian Ganglion for Relief of Trigeminal Neuralgia. C. M. Byrnes, Baltimore.
46 Animal Calorimetry. G. Lusk, Baltimore.
47 *Variation in Tuberculin Hypersensitiveness During Course of Pulmonary Tuberculosis. J. B. Holmes, Baltimore.
48 *Relation of Sensory Nerves to Inflammation. H. N. Stevenson and M. R. Reid, Baltimore.
49 *Occurrence of Bacterium Welchii (Bacillus Aerogenes Capsulatus) in Dejecta of Children. J. H. M. Knox, Jr., and W. W. Ford, Baltimore.

45. **Injection of Alcohol Into Gasserian Ganglion for Relief of Trigeminal Neuralgia.**—Byrnes' clinical (in fourteen cases) and experimental (on dogs) observations have convinced him that in the treatment of trigeminal neuralgia, a single successful injection of alcohol into the gasserian ganglion is followed by immediate relief of pain and all the symptoms indicative of its complete physiologic destruction. Although a general anesthetic is not administered, the painfulness of the injection is not unbearable or greater than that experienced in making deep intraneural injections. In experienced hands, this form of treatment is without serious risk, and no fatalities have been recorded as a direct result of the injection. Byrnes asserts that in spite of the contentions of Alexander and Unger, injections in man by exposure of the ganglion appear to be unwarranted and lacking in judgment, except in rare cases in which this slight saving of time may determine the immediate result during exposure of the ganglion. If the ganglion is in view or accessible, direct injection might be practiced; otherwise the original

operation for removal or avulsion of the root should be employed. If deep neural injections have been unsuccessful, and repeated attempts to inject the ganglion by the subcutaneous method have failed, Byrnes agrees that an effort might be made to inject through the exposed foramen ovale before resorting to the subtemporal operation for removal.

It has been demonstrated, by fractional injection, that the extent of destruction may be, in a measure, limited to that portion of the ganglion from which the affected nerve-trunk originates; and that not infrequently the corneal fibers can be spread. From the distribution of corneal anesthesia, following partial injections of the gasserian ganglion, it appears that the upper and lower halves of the cornea receive separate innervation. In cases of bilateral trigeminal neuralgia, injection of the ganglion possesses distinct advantages over other methods of radical treatment. Since anatomic continuity is not actually destroyed and the motor nucleus is not directly affected, conditions are most favorable for recovery of motor function; while sensation should be permanently lost if the ganglion is completely destroyed. Thus, by allowing sufficient time for regeneration in the motor root, bilateral ganglionolysis might be safely practiced. Experimental studies appear to indicate that it is not probable that the ganglion can be completely destroyed by a single injection of alcohol. It is Byrnes' opinion, however, that by repeated injections of the ganglion its complete destruction may finally be accomplished. Byrnes has treated fourteen patients. A little more than eighteen months have elapsed since the earliest injection. During this period, six patients who were treated more than a year ago are still free from pain—the longest period of relief being eighteen months. Four patients, treated within the last twelve months of this period have had no return of pain. Three patients in whom only partial injections were obtained, returned for further treatment.

47. **Tuberculin Hypersensitiveness in Pulmonary Tuberculosis.**—The application of the intracutaneous test of Mendel to the study of the course of tuberculin hypersensitiveness in tuberculous human beings is the basis of Holmes' paper. The eight patients examined were all under institutional treatment. The treatment was essentially the same in each case—hygienic and dietetic. All the cases had been diagnosed as actively tuberculous; the conjunctival test had been employed in many. Each patient was carefully examined from time to time, the more frequently when there was reason to believe some change might be present. All were under Holmes' immediate supervision. A record of the temperature of each patient was available at all times, and a chart containing his subjective sensations, as recorded by himself, was available in most cases. The tests were made at intervals of fourteen days. Three injections were usually given at a distance of from 3 to 4 cm. from each other; first the control solution distally, then the tuberculin dilutions in order of strength, the weaker nearer the control. In subsequent tests, an effort was made to avoid the site of earlier application, lest local hypersensitiveness should be induced.

Each individual was tested first for reaction to 1/100,000 mg., or at least to a dilution weaker than that to which it was likely he would react. Subsequent tests were made to include the dilution to which the patient had previously reacted, and one weaker dilution, or one stronger dilution, or both, according to the peculiarities of the case, as shown in previous reactions. Reactions were read after forty-eight hours; the traumatic (control) reaction had faded away by this time, whereas the tuberculin reaction was then at its height. These studies showed that individuals suffering from pulmonary tuberculosis present marked tuberculin hypersensitiveness soon after the clinical onset of the disease. This hypersensitiveness diminishes if they improve and fluctuates or remains stationary, if they do not improve. More advanced cases, in time of exacerbation, present this elevated hypersensitiveness again; it rises or falls, following more or less closely the clinical course of the disease. Toward death, it may rise much higher, and then fall until it fails entirely.

48. **Relation of Sensory Nerves to Inflammation.**—The relation of the sensory nerves to inflammation is an unsettled question. It is generally believed that an area deprived of its sensory nerve-supply is more susceptible to injury, but recent observations tend to show that the inflammatory reaction in such an area is beneficially modified. The definite results of Bruce and Januschka indicating an amelioration of the inflammatory reaction, as contrasted with the generally accepted idea that there is an increased susceptibility to injury in parts deprived of their sensory nerve-supply, led the authors to repeat in part their experiments. With the sensory nerve-endings eliminated by degeneration an inflammatory reaction was produced by Stevenson and Reid with mustard-seed oil, which was identical with that shown in the control while it lasted, but which subsided more rapidly than in the control and returned more quickly to normal. Cantharides plaster produced inflammation in anesthetic areas in which the sensory nerve-endings had degenerated. This reaction was identical with that observed in the control areas. In areas in which local anesthesia was produced, a definite inflammatory reaction was produced by mustard-seed oil. Morphin and chloral modified the inflammatory reaction to mustard-seed oil in the eye, but probably not through their action on the sensory nerve-endings.

49. **Bacterium Welchii in Dejecta of Children.**—In 18 children suffering from minor ailments but without marked derangement of the intestinal tract, *Bacillus aerogenes capsulatus* was isolated by Knox and Ford on the first examination, in nine cases. The original milk tubes showed characteristic reactions, the rabbits revealed gaseous edema on inoculation and positive cultures were obtained from the organs and tissues. In nine other cases the organism was not obtained on the first trial, but subsequent examination revealed it in all instances. In some of the cases the majority of the milk tubes inoculated had a characteristic appearance at the end of twenty-four to forty-eight hours. In two cases the first examination was negative, but material was not available for a second trial. In 7 breast-fed infants from the obstetric ward the dejecta from 6 were negative for the "gas-bacillus" reaction, although 15 to 20 tubes were inoculated with material from each case. In one instance, however, one milk tube in the series inoculated gave positive results. In this case the possibility of contamination can be excluded. It is evident to the authors, from the results of their inquiry, that *B. aerogenes capsulatus* must be regarded as a normal and constant inhabitant of the intestinal tract in children except in breast-fed infants.

Canadian Medical Association Journal, Toronto

January, V, No. 1, pp. 1-84

50 Liver in Its Relation to Operations on Biliary Tract and Stomach. G. W. Crile, Cleveland.
51 Pelvic Inflammation. A. L. Lockhart, Montreal.
52 Some Elementary Features of Roentgen-Ray Diagnosis of Gastric Carcinoma, Gastric Ulcer and Duodenal Ulcer. R. D. Carman, Rochester, Minn.
53 *Congenital Dislocation of Hip. C. L. Starr, Toronto.
54 Sporothrix Bearing Some Resemblance to Sporothrix Beurmanni. G. E. Learmonth, High River, Alberta.
55 Glaucoma. P. G. Bell, Winnipeg.
56 Carcinoma of Breast in Man with Apparently Healed Miliary Tuberculosis. L. B. Robertson, Toronto.

53. **Congenital Dislocation of Hip.**—Starr claims that about 75 per cent. of the cases under 8 years of age coming under his observation can be reduced by manipulation, and a perfect anatomic and functional result obtained. In possibly a small percentage of cases the head is not retained in the acetabulum but slips forward as an anterior transposition, giving what may be called a functional cure but not an anatomic one, the chief defect being a small amount of shortening which necessarily remains. In some 5 per cent. of cases it has been found necessary to make the reduction by operative means. The chief hindrances to the reposition of the head as found in such operation, has been the thickened and contracted condition of the capsule. By making a free crucial incision through the anterior portion of the capsule,

a grooved instrument, similar in character to a shoe spoon, may be introduced, the end of the instrument reaching the margin of the acetabulum, and the head of the femur may be "skidded" along this hollow into the socket.

Florida Medical Association Journal, Jacksonville

January, I, No. 7, pp. 193-224

57 Syphilis of Innocent. J. L. Kirby-Smith, Jacksonville.
58 Directions. U. S. Bird, Tampa.
59 Character of Infant Stools. W. C. Page, Live Oak.
60 Human Case of Glanders. L. A. Peek, West Palm Beach.
61 Treatment of Drug Addictions. M. B. Herlong, Jacksonville.
62 Toxemia: Some Points on Etiology and Symptoms, with Deductions. C. G. Roehr, Fort Pierce.
63 Epileptic Child. D. C. Main, Welaka.

Georgia Medical Association Journal, Augusta

January, IV, No. 9, pp. 257-284

64 *More Rational Methods of Treating Aural Diseases. D. Roy, Atlanta.
65 Sluder Tonsil Operation. H. H. Martin, Savannah.
66 Tobacco Amblyopia. A. W. Stirling, Atlanta.
67 First Aid to Injured Eye. A. M. Mason, Waycross.
68 Convenient Face Shield for Nose and Throat Work. C. Stockard, Atlanta.
69 Mastoid Operation Without Artery Forceps or Ligatures. J. J. McLoone, Phoenix, Ariz., and R. M. Nelson, Atlanta.
70 Higher Education in Surgery. E. H. Bradford, Boston.

64. Abstracted in THE JOURNAL, May 9, 1914, p. 1500.

Journal of Cutaneous Diseases, New York

January, XXXIII, No. 1, pp. 1-72

71 *Germicidal Activity of Chrysarobin and Other Medicaments Used in Psoriasis. J. F. Schamberg, J. A. Kolmer and G. W. Raiziss, Philadelphia.
72 Primary Epithelioma of Hand. H. Fox, New York.
73 *Metabolism Study of Case of Chronic Urticaria. J. Rosenbloom and M. C. Cameron, Pittsburgh.

71. Germicidal Activity of Chrysarobin.—The authors summarize the results of their investigations as follows: Chrysarobin, as regards its influence on the *Staphylococcus pyogenes albus*, in the test-tube and in the bodies of animals fails to exert any appreciable germicidal effect. Sodium chrysophanate possesses no germicidal action in the test-tube on the said staphylococcus in saturated aqueous solution within a period of fifteen minutes. Intravenous injections of considerable doses exert no restraining influence on the formation of abscesses in the viscera when simultaneous intravenous injections of the *Staphylococcus aureus* are given. Sodium chrysophanate, when administered intravenously to white rats previously infected with the *Trypanosoma lewisi*, exerts no perceptible influence on the motility or viability of the trypanosomes.

Pyrogallic acid fails to inhibit the *Staphylococcus albus* except when the concentration is greater than 1 in 10 or 10 per cent. In doses of 1 to 10 c.c. of a 1 per cent. solution it fails to prevent pyemic abscesses in the viscera when injected with a bouillon culture of *Staphylococcus aureus*. Pyrogallol in increasing doses of 0.5 per cent. solution, given intravenously in white rats, fails to exert an appreciable influence on the motility of trypanosomes. Arsenic, Fowler's solution, in 1 per cent. aqueous solution, possesses no germicidal effect in the test-tube on the *Staphylococcus pyogenes albus*, after fifteen minutes' exposure. Sodium arsenate, in 20 per cent. aqueous solution, likewise has no germicidal effect on this organism, after fifteen minutes' exposure. Fowler's solution (representing 1 per cent. arsenious acid, in quantities of 0.2 to 0.4 c.c. in 5 c.c. of a sterile neutral bouillon), will inhibit 0.1 c.c. of a twenty-four-hour culture of *Staphylococcus aureus* after forty-eight hours' duration. Smaller quantities fail to inhibit. The intravenous administration of six times the average dosage per kilogram of body-weight, of an arsenious-acid solution, does not prevent staphylococci from producing abscesses in the kidneys.

Arsenic appears to exert an inhibitive effect on the number and motility of trypanosomes in the blood of white rats, but the dose required is a relatively large one.

Calomel, in quantities of 0.0005 to 0.001 gm. (1/120 to 1/60 grain) is absolutely germicidal to the cocci contained in 0.1 c.c. of a twenty-four hour broth-culture of *Staphylococcus aureus*. Calomel in 1 per cent. suspension is capable of destroying the cocci of the skin, both on normal skin and psoriatic patches. Chrysarobin under identical conditions fails to exert any appreciable germicidal effect.

73. Metabolism in Chronic Urticaria.—The diet given by Rosenbloom and Cameron consisted of 100 gm. protein, 110 gm. fat, 200 gm. carbohydrate and 16 gm. nitrogen, yielding to a total caloric value of 2,225, or 35 calories per kilogram of body-weight of the patient. In three days there was a nitrogen retention of 5.08 gm. The urea nitrogen in relation to the total nitrogen is very low. It should be about 80 to 86 per cent. of the total nitrogen. This low urea nitrogen is no doubt due to some loss of function of the liver. The ammonia-nitrogen, uric acid, acidity and ratio of uric acid nitrogen to the total nitrogen are normal. There was a marked disturbance in the absorption of nitrogen, as the fecal nitrogen in a certain percentage of the total nitrogen intake was about three times the normal. There was no diarrhea, therefore the patient showed a poor ability to absorb nitrogen, no doubt due to some intestinal condition.

The urinary sulphur partition was normal with the exception of the large amounts of neutral sulphur excreted on the first and second days. On the third day, when the neutral sulphur was normal, the ethereal sulphates showed an increased amount. The high neutral sulphur was indicative of a lessened oxidative capacity while the ethereal sulphate is an evidence of increased intestinal putrefaction. The amount of fat in the stool is above normal, showing an inability to absorb the usual amount. This is, also, no doubt indicative of some intestinal condition. The relation between the neutral fat, fatty acids, and soaps of the feces shows a poor ability to digest fats as shown by the high proportion of neutral fat. In the three days there was a loss of 0.04 gm. of calcium oxid and 0.01 gm. of magnesium oxid, which is perfectly normal. The proportion of calcium and magnesium oxids excreted in the urine and feces is also normal.

Kansas Medical Society Journal, Topeka

January, XV, No. 2, pp. 1-36

74 Care of Babies' Eyes. J. H. Johnson, Coffeyville.
75 Is Simple Cataract Caused by Chronic Pyogenic Infection? T. L. Higginbotham, Liberal.
76 Mutilation of Tonsil. J. M. Robinson, Hiawatha.

Maine Medical Association Journal

January, V, No. 6, pp. 197-240

77 Prevention of Blindness from Standpoint of Trachoma, Gonorrhea and Syphilis. H. T. Clough, Bangor.
78 Housing and Its Relation to Climate and Health. E. Nichols, Hebron.
79 Confusing Religion with Medicine. T. J. Stevens, Auburn.
80 Economic Cause of Disease. W. E. Gorgas, Cincinnati.

Medical Record, New York

January 23, LXXXVII, No. 4, pp. 127-168

81 Sympathetic Nervous System and Gastro-Enteric Functions. C. S. Fischer, New York.
82 Surgery of Seminal Vesicles. E. Fuller, New York.
83 What Do We Mean by "The Unfit"? R. T. Morris, New York.
84 Prophylactic and Therapeutic Immunization Against Tuberculosis; Its Possibilities and Limitations. S. H. Von Ruck, Asheville, N. C.
85 *New and Greatly Simplified Method of Blood Transfusion. R. Lewisohn, New York.
86 Myocardial Changes Following Acute Infectious Fevers. W. A. Dickey, Toledo.
87 Modern Roentgen Technic in Treatment of Malignant Conditions. M. W. Johns, Utica.
88 Twilight Sleep in Home. K. F. Junor, Brooklyn.
89 Nasal Tuberculosis. J. Coleman, New York.

January 30, No. 5, pp. 169-210

90 *Senile Paraplegia. Report of Cases. M. A. Starr, New York.
91 Tic Neurosis (Fourth Paper). L. P. Clark, New York.
92 Recent Work in Cardiovascular Disease. L. F. Bishop, New York.
93 Intervertebral Foramina in Man. H. Swanberg, Chicago.
94 Pituitary Extract in Intestinal Paresis. E. H. King, Allston, Mass.
95 Streptococcus Peril. H. F. Langhorst, Elmhurst, Ill.
96 New Visual Lithotrite (Cystoscope and Lithotrite Combined). J. London, New York.

85. **Simplified Method of Blood Transfusion.**—The technic used by Lewisohn is the following: Allow the blood to run through an ordinary cannula into a glass jar, containing 5 c.c. of 10 per cent. sodium citrate solution. While the blood runs into the jar it is stirred with a glass rod to effect a good mixture of blood and citrate solution. The blood is then poured into an ordinary glass funnel, which is connected with the other cannula by a piece of rubber tubing. The whole procedure takes five minutes. Lewisohn has used the method on two patients (transfusions of 300 c.c. and 500 c.c., respectively) without any untoward symptoms.

90. **Senile Paraplegia.**—The condition described by Starr, he says, may occur in anyone after the age of 65, depending on his general strength and vitality. The individual becomes gradually more and more feeble, and notices first an increasing disability in walking, in going up stairs, or in standing for any length of time. This undue weariness goes on to an actual feebleness of movement, no longer compensated for by the use of canes or help, and finally results in a partial paralysis of movement, so that it is with difficulty that the patient moves from room to room or chair to chair, and finally becomes bedridden. In some cases the weakness is attended by a marked ataxia, the incoordination being more extreme than the actual weakness. In some cases pain is a very prominent symptom, felt either on motion only, or on standing, although it may occur spontaneously, and is particularly severe after exertion and toward night. The pain is not infrequently attended by sensations of numbness and tingling, and is always attended by coldness of the feet and legs, and an objective coldness of the surface. Occasionally, however, burning pain has been complained of, even though the surface was felt to be cold.

An atrophic condition of the muscles is very often quite pronounced and is attended by a loss of the mechanical excitability of the muscles to percussion and by loss of the tendon reflexes. The limbs, as a rule, are flabby, cold and blue, showing that the vasomotor condition is below normal, and the circulation sluggish; not infrequently edema occurs when the patient is out of bed. Occasionally a loss of control of the sphincters occurs late in the course of the case. Pain in the back and around the loins, is a frequent accompaniment of senile paraplegia, and gives rise to much discomfort and distress, particularly at night, when it is liable to lead to insomnia. It seems possible to distinguish between certain groups. First, those in which the primary disease lies in the muscles alone. Secondly, in another group of cases, it is evident that there is an active degenerative neuritis present. Thirdly, there are cases in which it is evident that the spinal cord is the seat of the disease.

Missouri State Medical Association Journal, St. Louis

January, XII, No. 1, pp. 1-44

97 *Surgery of Heart. W. C. G. Kirchner, St. Louis.
98 What Knowledge Shall Be Imparted to Laity Concerning Cancer? F. J. Lutz, St. Louis.
99 Adequate Health Work Impossible Under Constitution in Missouri. D. Morton, St. Joseph.
100 Missouri Institute of Public Health. R. H. Jesse, Columbia.
101 Tuberculosis in Childhood. F. C. Neff, Kansas City.
102 *Bronchial Asthma. O. H. Brown, St. Louis.
103 Hemorrhagic Disease of New-Born. J. M. Brady, St. Louis.

97. **Surgery of Heart.**—Regarding the treatment of wounds of the heart Kirchner concludes as follows: Wounds of the heart, especially when accompanied by hemorrhage, should be sutured. When the hemorrhage is confined in the pericardium (hemopericardium) and the pulse is irregular and slow, prompt drainage of the pericardial sac is demanded. An early diagnosis is important, and in case of doubt exploratory pericardiotomy should be performed. The choice of the anesthetic and the manner of administration is important, and in no case should the anesthesia be profound. If the heart, when exposed, stops beating, gentle massage of the organ should be practiced. Unless the opportunity for infection were great, it is better not to establish primary drainage of the pleural cavity. The approach to the heart should be well planned, so that the operation may be performed as quickly as possible.

102. **Bronchial Asthma.**—It is Brown's belief that the symptom complex known as bronchial asthma is due, in the main, at least in many cases, to the following factors: bronchitis; chronic cough; overworked right heart; dilatation of bronchial capillaries, lymph vessels; reflex conditions. On one occasion, when a patient was suffering acutely, Brown gave 1/20 grain of strychnin, and waited for perhaps ten minutes, and there was little or no relief. Then he gave ¼ grain morphin, and much to his relief as well as that of the patient, the breathing almost immediately became easy. A few hours later another attack came on and he gave the morphin first, and there was little or no relief until the strychnin followed. Brown tried these agents repeatedly, sometimes giving one first then the other, but always the results were the same. If the two were given together the relief was prompt, and all but instantaneous. Later he used the drugs by mouth to avert the attacks.

New York Medical Journal

January 30, CI, No. 5, pp. 185-228

104 Modern Bone and Joint Surgery. Report of Cases. A. P. C. Ashhurst, Philadelphia.
105 Intercostal Thoracotomy in Empyema. H. Lilienthal, New York.
106 Endothelioma of Soft Palate. Report of Case. R. H. Ivy, Philadelphia.
107 *Auscultoplectrum; Combined Stethoscope and Percussion Hammer. L. Kolipinski, Washington, D. C.
108 Rectal Clinics in London. J. F. Saphir, New York.
109 Balantidium Coli. A. J. Hinkelmann, Galesburg, Ill.
110 Ether Insufflation Anesthesia (Intratracheal and Intrapharyngeal). J. H. Evans, Buffalo.
111 History of Medical Ethics. G. W. Cook, Washington, D. C.
112 Syncope and Fatal Asphyxia Under Nitrous Oxid-Oxygen. H. C. Luke, New York.

107. **Auscultoplectrum.**—The auscultoplectrum designed by Kolipinski is constructed as follows: The funnel end consists of an Otis urethroscope, size 25 or 26 French scale, with the obturator removed, heavily gold plated; 41 inches or 104 cm. of red or black rubber tubing, 5 m.m. in diameter; an ear piece, a small, acorn-shaped piece of hard rubber, such as is used in a phonendoscope or binaural stethoscope. The length of the whole instrument is 45 inches. A cork is the pleximeter with its narrower end applied to the body. The base of the cork is tapped with the plectrum. This is held by the fingers at its insertion into the rubber tubing, so that the metal tube is allowed a free elastic swing; the hand not being in direct contact with it. When percussing, the rubber tubing is hung about the neck.

New York State Journal of Medicine

January, XV, No. 1, pp. 1-43

113 *Exophthalmic Goiter and Its Treatment. J. Rogers, New York.
114 Early Diagnosis of Congenital Syphilis. C. G. Leo-Wolf, Buffalo.
115 Pitfalls and Mistakes in Diagnosis and Treatment of Syphilis. M. Zigler, New York.
116 *Dysmenorrhea. R. S. Morton, New York.
117 Fractures of Neck of Femur; Its Treatment. J. B. Walker, New York.
118 *Cystitis Colli. H. D. Furniss, New York.
119 Physician. E. E. Harris, New York.

113. Abstracted in THE JOURNAL, May 23, 1914, p. 1685.

116. Abstracted in THE JOURNAL, May 30, 1914, p. 1750.

118. Abstracted in THE JOURNAL, June 6, 1914, p. 1839.

Ohio State Medical Journal, Columbus

January, XI, No. 1, pp. 1-72

120 Scopolamin-Narcophin Narcosis. R. McPherson, New York.
121 Element of Certainty in Diagnosis. J. C. Oliver, Cincinnati.
122 Serum Therapy of Epidemic Cerebrospinal Meningitis in Childhood. A. G. Helmick, Columbus.
123 Cancer of Uterus: Surgical Treatment. U. K. Essington, Newark.
124 Health Problems Which Physicians Must Solve. G. E. Robbins, Chillicothe.
125 Effective Control of Trachoma Outbreak in Two Industrial Plants. M. A. Campbell, Columbus.
126 Program of New Ohio Bureau of Juvenile Research: Its Aims and Possibilities. T. H. Haines, Columbus.

United States Naval Medical Bulletin, Washington

January, IX, No. 1, pp. 1-178

127 Shock, Anoci-Association and Anesthesia. A. M. Fauntleroy, U. S. Navy.
128 Proposed Personnel, Organization and Equipment of Hospital Ship. E. M. Blackwell and O. G. Ruge, U. S. Navy.
129 Application of Wassermann's Reaction to Solution of Etiology of Tropical Ulcerations. C. S. Butler, U. S. Navy.
130 *Some Theories as to Origin of Jackson's Veil. J. M. Lynch, U. S. Navy.
131 Résumé of Etiologic Factors Concerned in Yellow Fever. C. B. Camerer, U. S. Navy.
132 Examination of Recruits. J. J. A. McMullin, U. S. Navy.
133 Experience of Surgeon During Occupation of Vera Cruz. G. T. Vaughan, U. S. Navy.
134 Experiences with Marine Expeditionary Force in Mexico. R. M. Little, U. S. Navy.
135 Treatment of Chronic Posterior Urethritis. G. T. Smith, U. S. Navy.
136 *New Method of Examining Stools for Eggs. C. M. Fauntleroy and R. Hayden, U. S. Navy.
137 Yellow Fever Which Prevailed on Board United States Ship *Jamestown* in 1866-67 at Panama. W. M. Kerr, U. S. Navy.
138 Card Index of Specific Cases. R. B. Henry, U. S. Navy.
139 Ottoscope as an Anterior Urethroscope. W. G. Steadman, Jr., U. S. Navy.
140 Report Concerning Heliotherapy and Ionic Medication as Employed at Las Animas, Colo. C. J. Holeman, U. S. Navy.
141 Compound Comminuted Fracture of Skull. T. W. Raison, U. S. Navy.
142 Case of Reamputation of Leg. R. Spear, U. S. Navy.
143 Tenoplasty for Contracture of Hamstring Tendons. R. R. Richardson, U. S. Navy.
144 Neosalvarsan and Mercury in Unilateral Luetic Palsy of Abducens. S. Walker, U. S. Navy.

130. **Theories as to Origin of Jackson's Veil.**—Against the theory of the inflammatory origin of these membranes, Lynch says, are the regularity of situation of the blood vessels, which usually run about a centimeter apart, and the serous surfaces moving one over the other with a fluid between. If due to inflammation, adhesions would take place between the two serous surfaces, as in pleurisy. His conclusions are: 1. The membrane described by Jackson is of embryonal origin, but it may be so altered by inflammation as to appear like an ordinary adhesion. 2. There are unquestionably adhesions of inflammatory origin, due to perityphlitis and pericolitis; these membranes should not be mistaken for those of Jackson, as there are many points of difference. 3. Kinking or malformations are due to improper fixation or rotation; and the length of the mesentery has a great deal to do with the kinking of the ileum.

136. **New Method of Examining Stools for Eggs.**—Fauntleroy and Hayden's method consists essentially of staining the fecal matter with anilin gentian violet. This solution stains everything on the slide except the eggs. It does not penetrate the membrane about the eggs and they are therefore left in a natural state. None of the other ordinary colored stains will do this. The entire slide with the exception of the real eggs is stained violet. This method of examination has been used in the examination of over a thousand stools with uniform success. All eggs, hook-worm and others, stand out very clearly and beautifully. About 2 gm. of the fecal material are thoroughly mixed with 5 c.c. of a 2 per cent. aqueous solution of compound solution of cresol in a centrifuge tube. The specimens are centrifugalized at high speed for one minute, the supernatant liquid is then decanted and fresh compound cresol solution added and mixed with the sediment in the tubes. This operation is repeated three times. On completion of the centrifugalization process a small portion of the bottom sediment is removed with a clean pipette and placed on a clean slide, a small drop of anilin gentian violet mixed with the sediment, and a clean cover-glass placed on it.

Wisconsin Medical Journal, Milwaukee

January, XIII, No. 8, pp. 297-332

145 Medical Ideals. V. C. Vaughan, Ann Arbor, Mich.
146 Social Insurance and Medical Profession. J. R. Commons, Madison.
147 Socialization of Medicine. W. F. Zierath, Sheboygan.
148 Status Lymphaticus. D. Hopkinson, Milwaukee.
149 Modern Illumination and Its Relation to Ocular Comfort. N. M. Black, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

January, IX, No. 1, pp. 1-50

1 *Early Pulmonary Tuberculosis in Childhood. K. Fraser.
2 Indications for Surgical Intervention in Pulmonary Tuberculosis. H. M. Davies.
3 Laryngeal Tuberculosis. H. Barwell.
4 Domiciliary Treatment of Tuberculous Patients. G. B. Dixon.
5 Discipline and Recreation in Sanatorium. W. J. Cox.
6 Apparatus and Technic for Production of Artificial Pneumothorax. T. D. Lister.

1. **Early Pulmonary Tuberculosis in Childhood.**—Fraser's communication is based on an analysis of the results of an investigation, clinical and otherwise, into certain important points in connection with 296 cases of pulmonary tuberculosis (mostly incipient) among schoolchildren attending elementary schools. Fraser found that the commencement of school life has a prejudicial effect on children predisposed to pulmonary tuberculosis. Inadequate increase of weight is very suspicious, and that weight and nutrition should not be considered independently. Defective nutrition is probably the earliest indication of a tuberculous infection, before any recognizable physical signs are present. Night sweating is only significant when the sweats are heavy and characteristic. It was present in 55.8 per cent. of the cases, being heavy in 10.2 per cent. A persistent hard, dry cough is the most suspicious type of cough. It was present in 134, or 45.3 per cent., of the cases. In nearly every case one or other apex is affected, and the right apex is most often the first clinically recognizable focus. In only one case (0.3 per cent.) was neither apex involved; the apices of both lungs were affected (with or without some other part or one or other lung) in 221 cases (76.8 per cent.).

Dulness is almost invariably present over the affected lung (95.3 per cent.). Inequality of the breath sounds is a very early indication of trouble; the duration of this is short, and it is usually succeeded by bronchial breathing, which is nearly always present and which remains indefinitely. Friction and fine crepitations are the most significant accompaniments; and all accompaniments when persistent, and especially if localized, are suspicious. Spontaneous improvement is more common in girls than in boys; from the sixth year the tendency to spontaneous improvement increases year by year; and children in rural areas show a very much greater tendency to spontaneous improvement than children in urban areas.

British Medical Journal, London

January 16, I, No. 2820, pp. 101-144

7 Mechanical Treatment of Compound and Suppurating Fractures Occurring at Seat of War. R. Jones.
8 Bactericidal Action of Collosols of Silver and Mercury. C. R. Marshall and G. B. Killoh.
9 Collosol Argentum and Its Ophthalmic Uses. A. L. Roe.
10 Insects and War: Mosquito. A. E. Shipley.
11 Relation Between Chemical Structure and Pharmacologic Action. J. M. Fortescue-Brickdale.
12 Case of Bilateral Optic Neuritis Due to Sphenoidal Sinusitis. A. A. Bradburne.
13 *Effect of Daylight and Drying on Human and Bovine Types of Tubercle Bacilli. L. Findlay and W. B. M. Martin.
14 Localization of Foreign Bodies by Means of Roentgen Rays. H. Mowat.

13. **Effect of Daylight and Drying on Tubercle Bacilli.**—It is stated by Findlay and Martin that the bovine type is distinctly more susceptible to the prejudicial effect of ordinary atmospheric influences (daylight and drying) than is the human type of tubercle bacillus. This difference between the types may in part explain why aerial infection with the bovine type is so infrequent in human beings.

Dublin Journal of Medical Science

January, III, No. 517, pp. 1-80

15 Influence of Science on Modern Medicine. J. T. Wigham.
16 Duty of Dental Profession to State in Relation to War. A. W. W. Baker.
17 Great European War. T. E. Gordon.

Indian Journal of Medical Research, Calcutta

October, II, No. 2, pp. 405-669

18 Malaria in New Province of Delhi. E. C. Hodgson.
19 Endemic Malaria of Jeypore Hill Tracts of Madras Presidency. E. L. Perry.
20 *Examination of Peripheral Blood of Kala-Azar Patients. W. S. Patton.
21 Progress of Kala-Azar in Localized Community. F. P. Mackie.
22 *Some Bodies of Unknown Nature Found in Feces of Kala-Azar Patients. F. P. Mackie.
23 Cinchona Derivatives Inquiry. A. C. MacGilchrist.
24 Salivary Secretion of Commoner Blood-Sucking Insects and Ticks. J. W. Cornwall and W. S. Patton.
25 Culturable Free Living Flagellate and Determination of Lethal Value of Certain Chemicals Thereon. G. C. Chatterjee.
26 Simultaneous Occurrence of Cholera and Cholera-Like Vibrios in Tissues of Cholera Patients. E. D. W. Greig.
27 Hemolytic Action of Indian Strains of Cholera and Cholera-Like Vibrios. E. D. W. Greig.
28 *Methods of Estimation of Quantity of Organisms in Suspension. W. F. Harvey and H. W. Acton.
29 Suckered Round-Worms from India and Ceylon. C. Lane.

20. **Peripheral Blood in Kala-Azar Patients.**—Patton has no difficulty in finding the parasite of kala-azar in films of the peripheral blood. The technic employed aims at collecting as many of the leukocytes at the end and the sides of the blood film as possible. The film is then deeply stained with Romanowsky's stain and examined, either with a dry objective, or if time is of no particular consequence, the film may be searched with an oil immersion lens. The parasite was found in the first blood film examined in 42 of the cases, in the second film in 13 cases, in the third film in 12 cases, in the fourth film in 5 cases, and in the fifth film in 2 cases, in the sixth film in 4 cases, in the seventh film in 1 case, in the eighth film in 1 case, in the ninth film in 2 cases, in the seventeenth film in 1 case, and in the twentieth film in 1 case. Many of the patients were clearly in the early stages of the disease.

22. **Bodies Found in Feces of Kala-Azar Patients.**—Especial attention has been paid by Mackie to the feces as one of the possible routes by which the specific parasite might escape. On several occasions he has found one, two, or sometimes a small group of bodies which, in size and general morphology, were indistinguishable from leishmania, with such modifications as one might reasonably expect these bodies to assume in feces. In these few isolated cases, the suspicious bodies were generally lying in or on a small mass of mucus, in which, it may be, they were protected from the action of bacteria. Eighty-two cases of kala-azar have been subjected to examination; eight were found to contain the bodies in question in considerable numbers, eight contained a few, and sixty-six were negative. When the fecal material is kept diluted with water, these bodies generally survive the other cellular elements, and in some cases have been seen to persist with little change for ten, twelve and even eighteen days. In 9 cases in which "bodies" were found, the patients were diagnosed as "clinically typical" of kala-azar in 5 they were returned as "clinically probable," and in 2 clinical state was "suspicious."

The feces of 26 healthy persons did not show the bodies in question, either in freshly passed mucus or in the dilutions which were examined daily for six days. In size they vary from about 2 microns to 4.5 microns, rarely larger, and almost invariably possess one large uniformly-staining nucleus and often a small nodule of azurphil substance generally placed close to the margin. There is always a defined cell wall which is generally seen as a clear margin, but sometimes it is dense enough to give a double contour on focussing. The cytoplasm is either hyalin or contains certain small chromatin-like dots or is marbled or finely vacuolated. In some specimens which resisted decomposition in water for some days, the nuclear network was seen to be very irregular and the internal structure highly complex and pleomorphic. Some bodies appeared in small clumps and were quite round, with a strong double contour and a basophilic nucleus almost completely filling up the cell. These resembled groups of moniliform spores.

28. **Estimation of Quantity of Organisms in Suspension.**—The methods employed by Harvey and Acton were: (1) Count against red blood corpuscles. (2) Colony production on Conradi-Drigalski plates. (3) Exhaustion of content of suspension by dilution. (4) Inoculation into animals. They conclude that the area of bacterial growth on solid nutrient medium may, other things being equal, be taken as a fair measure of quantity—at all events for the dysentery bacillus. Enumeration against red blood corpuscles and colony production give fairly consistent results when used for the enumeration of bacteria, such as the bacillus of dysentery, in suspension. The estimate obtained by the method of colony production is lower than that given by enumeration against red blood corpuscles. Enumeration by exhaustion gives low counts but the method is useful as a check on other methods. Interval between inoculation and death as a measure of toxicity or of quantity did not, under the conditions of experiment, yield any satisfactory results.

Indian Medical Gazette, Calcutta

December, XLIX, No. 12, pp. 457-496

30 Training of Senior Indian Medical Service Officers in Home Commands. P. Hehir.
31 Studies in Malaria. H. Stott.
32 *Treatment of Suppuration by Pus Inoculations, and Treatment of Pneumonia by Subcutaneous Injections of Patient's Own Blood. V. Nesfield.

32. **Treatment of Suppuration by Pus Inoculations.**—It is pointed out by Nesfield that the logical vaccine treatment for a suppurating wound, compound fracture, boil, carbuncle or inoperable surface cancer, is to inject the issuing pus when rendered innocuous, as this contains the true toxins derived by the living organism in the living host. At first Nesfield heated the pus, now he treats it for twenty-four hours with 1 per cent. phenol and camphor. Neither camphor, nor weak phenol damage toxins or antibodies, nor do they coagulate nor, as far as is known, form compounds with tissue juices. Such a vaccine (pus) contains not only the identical infecting organisms, but also active ferments, antibodies and true toxins. The organisms even in a twenty-four hour culture are many generations removed from the original infecting organism and have probably developed very different chemical substances and toxins and hence are not truly similar to those in the lesion. Nesfield has injected such pus over 1,000 times and has never found an abscess to result. The dose: First day 2 minims, second day 3 minims, third day 4 minims and so on, daily till 17 minim doses have been given. If required 10 minim doses can be given after this on alternate days. Prophylactic dose, 5 minims. The reaction: It is quite ordinary to get induration at the site of injection, and for the temperature to rise 1 or 2 degrees. This should not be feared.

Journal of Tropical Medicine and Hygiene, London

January 1, XVIII, No. 1, pp. 1-12

33 Sigmoid Flexure in Health and Disease. J. Cantlie.

Lancet, London

January 16, I, No. 4768, pp. 115-170

34 Estimation of Physique and Stamina for School Purposes. A. A. Mumford.
35 *Frost-Bite. A. W. Mayo-Robson.
36 Results of Clinical Investigations Based on Methods of Abderhalden. J. O. Gavronsky.
37 Roentgen Ray Diagnosis of Chronic Cerebral Abscess. W. Clegg and H. Black.
38 Some Cases of Gunshot Fracture. J. J. Clarke.
39 Pellagra in Antigua. W. M. McDonald.
40 *Effect of Calcium Chlorid on Hemolysis Occurring in Vivo. W. W. C. Topley and S. G. Platts.

35. **Treatment of Frost-Bite.**—Mayo-Robson emphasizes that in the treatment of frost-bite it is of the utmost importance to save as much of the injured extremities as possible, and as it is impossible to say how much of the damaged tissues will survive, immediate or early amputation is absolutely contra-indicated. The best treatment at first is friction with snow or cold water in a cold room, the changes to a warmer atmosphere being gradually brought about. Frictions with turpentine and oil or with spirit and soap liniment are useful remedies in the early stage, and after the friction the limbs should be raised on pillows and swathed in cotton-

wool, which can be held in position by bandages applied loosely so as to avoid any danger of constriction. If blisters form, or discoloration of the toes or other parts shows that gangrene is probable, the whole foot should be sterilized by rubbing with oil of turpentine to cleanse the skin or with spirit containing 1 in 500 biniodid of mercury, after which strips of sterilized double cyanid gauze should be applied between the toes and the same gauze made to cover the whole foot, which is then enveloped in sterilized cotton-wool. Any blisters—which will be found to contain dark blood stained fluid—should be snipped and carefully dried and dressed with the spirit and biniodid lotion. Painting the foot with tincture of iodin would probably be quite as effectual, as an antiseptic, as the spirit and biniodid solution.

Every effort should be made to keep the parts dry and sterile, and if gangrene occurs the surgeon should on no account make too great haste to amputate, as the tissues adjoining the line of demarcation become more and more healthy and the line of granulation tissue between the dead and living tissues, if kept aseptic, gives rise to little discharge and can be kept aseptic by a daily dressing with the spirit solution. Ultimately, when it is seen what flaps of skin are available, the dry, shrivelled gangrenous parts can be removed and the bones severed at such points as will allow the flaps to be conveniently applied to make a good cover to the stump. Cases in which the gangrenous process has only involved the superficial layers of the skin, the separation of the necrosed part should be left to Nature and afterward skin grafting will be found useful. If as the result of neglect or the use of wet dressings the gangrene has assumed the moist variety and the wounds are infected, the spirit dressings will still be useful, and the foot should be well dusted with equal parts of zinc oxid and boric acid, so as to make every effort to convert the moist into dry necrosis, and thus to avoid general septic complications and the danger of the gangrene spreading.

40. **Effect of Calcium Chlorid on Hemolysis.**—The experiments described by Topley and Platts afford no evidence of any protective influence being exerted by calcium chlorid on the red cells of animals subjected to the action of a specific hemolytic serum, though this salt serves to inhibit the lysis of the same cells by the same serum in test-tube experiments. Conclusions as to the therapeutic value of this and similar salts based on in vitro experiments must therefore be held to be invalid.

Annales de Médecine et Chirurgie Infantiles, Paris

December, XVIII, Nos. 16-24, pp. 537-572

41 Winter Health Resorts Still Available in Europe. (Ou envoyer cet hiver nos petits malades?) E. Périer.

Bulletin de l'Académie de Médecine, Paris

December 29, LXXII, No. 42, pp. 433-462

42 Horse Serum to Arrest Hemorrhage. Leclercq and Roussel.
43 Colloidal Metals Contra-Indicated in Typhoid. (Les métaux colloïdaux—ferments métalliques—sont contre-indiqués dans le traitement de la fièvre typhoïde. Leurs indications à propos de quelques incidents de la maladie.) A. Robin.
44 *Rest for Marching Troops. (Un moyen de délassement pour les troupes en marche.) M. de Fleury.
45 *Heart Disease among the Troops. (Les maladies du cœur aux armées.) C. Fiessinger.
46 Localization and Extraction of Foreign Metallic Bodies. (Un dispositif tres simple pour le localisation des projectiles par la radioscopie.) Haret, Schlesinger, A. Desjardins, P. Aubourg and Jaugeas.
47 Organization of Typhoid Service in the Military Hospitals at Vichy. J. Castaigne.
48 The Non-Toxicity of the Cerebrospinal Fluid in Tetanus. P. Sainton and Maille.

44. **Passive Ischemia as Means to Overcome Fatigue.**—De Fleury's experience with the troops has confirmed the remarkable relaxation and relief that follow the simple measure suggested by Jacquet. He calls it the biokinetic method of resting; it aims to expel the blood from the legs by raising them. The men take off their shoes and lie on the ground close to a wall or tree and raise their legs against the wall to a right angle with the body. In this attitude the toes, ankles and knees are worked. If the shoes are not taken off, the benefit is less, but even then the refreshing influence of this transient ischemia is notable. The head should be raised as on a pillow. A body of men apparently entirely exhausted recuperate their energies with five, ten or fifteen minutes' exercise of this kind, the rest and the flood of blood which pours into the tissues as they get up.

45. **Heart Disease Among the Troops at the Front.**—Fiessinger has twelve patients with chronic heart disease who volunteered to go to the front, and who keep themselves in good condition with very small doses of digitalis three days in the week as a preventive measure, and for ten days at a time, with four-day intervals, when compensation is failing. Six with a mitral affection have thus kept up with the campaign to date. One young man with aortic insufficiency forgot to take his digitalis and had to be sent home. Another with aortic insufficiency serves in the aeroplane corps, and there has been no aggravation of the valvular trouble although he had one severe fall, dislocating his shoulder. (See also Paris Letter, page 524.)

Presse Médicale, Paris

December 24, XXII, No. 81, pp. 741-748

49 Localization of Bullets. (Localisation précise des projectiles par la radioscopie.) Jaugeas, Haret and Schlesinger.
50 Applied Anatomy of the Arm. (Une page d'anatomie chirurgicale.) A. Broca.

December 31, No. 82, pp. 749-756

51 *Drug Addiction in Wartime, with Supply of Drugs Cut Off. (Les toxicomanes et la mobilisation.) M. Briand.
52 *Epinephrin in Typhoid. E. Sergent.

January 7, XXIII, No. 1, pp. 1-8

53 *Infant Hygiene and Medical Care. (Chaire d'hygiène et de clinique de la première enfance; leçon inaugurale.) A. B. Marfan.
54 *Diagnosis of Typhoid among the Troops. A. Orticoni and P. Ameuille.

51. **Drug Addiction in France After the Mobilization.**—Briand relates that numbers of young women have come for treatment for drug addiction since the war began, as the men from whom they used to buy their morphin or cocain have gone to the front and they are unable to find others to supply them or they have no money to buy the drugs now that the short supply has raised the price. In many cases friends have persuaded the drug addicts that now is the chance for them to take a course of treatment; in other cases the disturbance from lack of the drug has been such as to land them in the hospital. In analyzing the cases he finds several in which the habit was started by a physician's prescription or by a nurse against the physician's orders. Briand also tells of drug addicts among the troops whose enthusiasm under the colors has tided them along through the first stages after deprivation of their accustomed drug and they are now well on the way to a complete cure of their addiction. One man, an alien, enlisted while under the influence of morphin and now demands to be dismissed as he was not responsible at the time.

52. **Epinephrin in Typhoid.**—Sergent has long proclaimed the important part played by the suprarenals in typhoid fever; they seem to be affected early and suffer severely from the typhoid toxin, as is manifest in the prostration and low blood pressure which form such a dangerous element in the typhoid syndrome. The cardiovascular derangement is often the direct cause of death; it can be best combated by supplying systematically the active principle of the suprarenals. It should be given early, without waiting for serious symptoms to develop; he gives it twice a day in small doses and thinks that it would prove a great aid also for the severely wounded, tiding them past the first tendency to collapse.

53. **Hygiene and Medical Care for Infants.**—This lecture opened the newly organized course on this subject at the Paris medical school, the authorities now realizing the importance of caring for the generation that is to replace the losses in war. Marfan remarked that he has no *chef de clinique*, no *chef de laboratoire* and that the laboratory is scarcely working at all, while he has numerous military duties to perform, but with the aid of four women physicians he enters confidently on this new work at the Hôpital des Enfants-Malades with its affiliated day nurseries and "infant consultations." His guiding principle is always that nearly

all of the affections which prove fatal among young infants are avoidable. Even pneumonia is much less fatal in infants who are not debilitated by preceding digestive disturbance or constitutional weakness. The four great enemies with which we have to contend are congenital debility, inherited syphilis, digestive disturbance and improper feeding. The first two should be warded off by appropriate measures before the child is born or even conceived; the last two by breast feeding. The medical profession thus shows the way not only for practical eugenics but for reducing infant mortality to the minimum. It is the physician's task to keep pointing the way, striving in each individual case to keep as close to the ideal as possible. No one can take the place here of the practiced physician, no devotion on the part of the laity can compensate for medical guidance in each case, correcting errors, overcoming prejudices, etc., teaching hygiene based on the knowledge of the pathology of the infant. Many young physicians, he added, are graduated without proper knowledge in this line although every facility is offered them in the curriculum but the courses in obstetrics and pediatrics are elective and hence are too often neglected by the students.

Hygiene and pathology are closely united at this age; the slightest infraction of the laws of hygiene brings an upset, while the adult often apparently escapes the penalty. The intensity of the reaction to infection and the tendency for it to become generalized are peculiarly marked in infants, especially the tendency to spread by way of the lymphatics. The lymphatics are exceptionally permeable but the lymph glands are unusually well fitted to arrest the invading process. Another special feature of the pathology of the infant is that any local disturbance upsets the general health more completely than in adults.

54. **Early Diagnosis of Typhoid.**—Orticoni comments on the extreme importance of prompt differentiation of typhoid fever in the trenches, remarking that in his corps every case of acute febrile bronchitis yet encountered proved to be typhoid fever. In one case the syndrome simulated appendicitis, in two others cerebrospinal meningitis. In a number of other cases typhoid seemed certain but there was no agglutination and inoculation of animals was negative. The prompt recovery of the men confirmed the harmless character of their transient sickness.

Revue Médicale de la Suisse Romande, Geneva

December, XXXIV, No. 12, pp. 697-752

55 *Partial Fusion of Radius and Ulna. (3 cas de synostose radio-cubitale congénitale.) C. Martin-Du Pan.
56 *Enucleation of the Eyeball. (Notes sur 500 cas d'énucléation oculaire.) J. Gonin.
57 The Cell Count in the Cerebrospinal Fluid. (Procédés de numération des éléments cellulaires du liquide céphalo-rachidien.) E. Cottin.

55. **Partial Fusion of Radius and Ulna.**—Du Pan found by chance this congenital anomaly in three children of 8 and 13, but, as the functional disturbance was slight, no attempt to correct it was made. Study of the literature confirmed the wisdom of abstention as in the five instances in which operative treatment was applied the results were not permanent, the bones growing together again afterward. The muscles, tendons and the joints have adapted their growth to the congenital synostosis, and hence mere separation of the long bones is far from restoring normal conditions.

56. **Enucleation of the Eyeball.**—In Gonin's hospital practice this operation is required for fully 5 per cent. of the eye patients, but the proportion is less in his private practice, as severe injury of the eyes from foreign bodies, explosions and goring accidents is comparatively rare among the well-to-do. The retina had separated in fully 70 per cent. of the 500 cases, but other factors had contributed to the blindness in most of them. He has had all the enucleated eyeballs preserved in gelatin-glycerin for teaching purposes, arranged in sets according to the character and seat of the lesion. He reaffirms from his experience the relative harmlessness of even a considerable loss of the vitreous body when there is no adhesion to the retina; also the frequency of a diffuse retinitis rarely perceptible with the ophthalmoscope; the varying importance of injury of the sclera in regard to detachment of the retina according as the injury is near or remote from the equator of the eye; and, finally, the hitherto unsuspected frequency of detachment of the vitreous body and detachment of the choroid.

Beiträge zur klinischen Chirurgie, Tübingen

XCIII, No. 3, pp. 487-762. Last indexed Feb. 6, p. 548

58 Wounds of the Limbs. (Schussverletzung der Extremitäten.) M. Gerulanos.
59 *Physiology of the Appendix. (Zur Physiologie des Blinddarmanhangs.) B. Heile.
60 Friedmann's Treatment of Tuberculosis. (Zur Bewertung des Friedmann'schen Tuberkulose-Vaccins.) W. V. Simon.
61 Present Status of Experimental Cancer Research. (Krebsforschung.) H. Simon.
62 Xanthosarcomas of Tendon Sheaths and Joints. S. Weil.
63 Influence of Decompressive Trephining on Choked Disk. (Einfluss der Palliativtrepanation auf die Stauungspapille.) R. Brade.
64 Technic for Operations on the Tongue, Throat and Larynx. (Operationen an Zunge, Rachen, Kehlkopf.) A. Tietze.
65 *Operations on the Arch of the Aorta in Dogs. (Operative Ausschaltung des Aortenbogens.) E. Jeger.
66 Wounds of the Lungs. (Zur Behandlung der Stich- und Schussverletzung der Lunge.) Ruhsamen.
67 Modified Technic for Transplantation of Bone for Tuberculous Spondylitis. I. Wierzejewski.
68 Technic for Operative Treatment of Spina Bifida and Encephalocele. Pomorski.
69 Resection of the Thymus. Pomorski.
70 Sources of Error in Diagnosing Appendicitis. H. Küttner.
71 *Postoperative Paresis of Stomach and Intestines. (Postoperative Magen- und Darmlahmungen.) A. Peiser.
72 Pancreas Complications after Resection of the Stomach by Billroth II. H. Küttner.
73 Simultaneous Cancer and Ulcer in the Stomach; Two Cases. R. Levy.
74 Prognosis and Treatment of Perforated Gastric Ulcer. Hanck.
75 *Influence of Stagnation of Urine on Development of Pyogenic Kidney Infection. H. Harttung.

59. **Physiology of the Appendix.**—Heile's experiments with dogs having a fistula into the appendix, or studying the functioning of the appendix in other ways, have demonstrated, he asserts, that the musculature of the region, including the appendix, forms a single whole in its muscular action, each element having its share in effectual peristalsis. Besides this muscular action, the walls of the appendix secrete ferments that split albumin and carbohydrates. The cells of the appendix secrete further a hormone.

65. **Operations on the Arch of the Aorta.**—Jeger performed operations on dogs aiming to induce conditions like those necessary in operating on an aneurysm at this point in the human aorta. The technical outcome was fine but the animals so far have succumbed to complications.

71. **Postoperative Paralysis of Stomach and Intestines.**—Peiser cites a recent compilation of 142 cases of acute paralysis of the stomach after an operation, with 52 per cent. mortality. This shows that postoperative paralysis is more common than used to be suspected; in many cases it probably subsides spontaneously. The tendency to it must be greater when the stomach is weak from congenital or acquired causes, and this should be ascertained as a routine measure before operations. A tendency to an unstable nervous system also affords a predisposition. In his experience the working classes are less liable to it than the well-to-do. Deep general anesthesia magnifies any preexisting predisposition and reflex inhibition as the peritoneum is incised. All these factors may cooperate, and extreme thirst after a laparotomy should warn of trouble. Thorough rinsing out of the stomach is the best remedy, possibly supplemented by turning the patient into the prone or knee-elbow position. He reports a case in which the bowel as well as the stomach developed paralysis after a laparotomy for disturbance from adhesions. He believes that a hard purge before the operation invites paralysis later, and urges abundant use of superheated air as a means to promote peristalsis after operations, but never in the form of the hot-air box. This makes too great demands on the heart. The electric hot pad answers the purpose fully without affecting the general condition.

75. **Hydronephrosis and Infection.**—Harttung's long article is profusely illustrated in connection with experiments on sixty-two rabbits in which he threw a ligature around one

ureter. The conditions thus induced invited suppuration in the kidney. When the infection was of ascending origin, the kidney pelvis was involved first and predominantly. With blood-borne infection the cortex suffered most.

Deutsche medizinische Wochenschrift, Berlin

January 1, XLI, No. 1, pp. 1-32

76 *Abdominal Pain. (Leibschmerzen.) J. A. Grober.
77 *Marriage for Women with Nervous or Mental Disease. (Zur Frage der Konzeptionsbeförderung und der Eheschliessung bei Nerven- und Geisteskrankheiten.) E. Meyer.
78 *Ten Years' Experience with Scarlet Fever. (Scharlachstatistik.) H. Barasch.
79 Advantages of Bang's Test for Sugar in Minute Amounts of Blood. (Ueber Blutzuckerbestimmungen in kleinsten Blutmengen.) W. Wolff.
80 Treatment of Venereal Disease at the Front. (Zur Behandlung von Geschlechtskrankheiten.) K. Zieler.
81 *To Ward Off Vermin and Typhus. (Zur Prophylaxe des Flecktyphus.) A. Blaschko.
82 *Prophylaxis of Pneumonic Plague. (Lungenpest.) E. Martini.
83 Hygiene and Comfort in the Trenches. (Die Hygiene in den Deckungen im Stellungskriege.) Feichtmayer.
84 Operative Treatment of Wounds of the Spinal Cord; Twenty Cases. (Rückenmarksverletzungen im Feldlazarett.) Noehte.

76. **Treatment of Abdominal Pain.**—Grober emphasizes anew that the necessity for immediate treatment of emergency conditions should never mislead the physician into being content with superficial action. From the way in which his measures act, he may be able as he supervises the case to guess at the underlying cause which it is his task to seek and root out. Abdominal pain, in particular, may be set up by the most diverse causes; most common, perhaps, is acute catarrhal trouble in the stomach and upper bowel from an error in diet. A gastric ulcer was responsible in a case in a young woman, and sudden invagination or volvulus of the bowel in a boy of 8. In another case the abdominal pain was traced to gall-stones, but tuberculous lesions, ulcerations, typhoid, dysentery, hernia and appendicitis may all set in with abdominal pain as the first symptom to attract attention, likewise female trouble and acute disease of the gall-bladder, pancreas or kidney region. Moist or dry heat to the abdomen and opiates will relieve the pains, probably by the afflux of fresh blood or by its diversion to the skin. A warm sitz-bath and removal of pressure in the abdomen by evacuating the stomach, intestines and bladder aid in relieving the pain. A tendency to nausea can be combated by placing scraps of ice in the mouth, turning the head so the water will run out of the mouth. A few drops of lemon juice on the ice may help. Sherbet and ices in general may be useful in combating nausea, and they deserve more extended use, he says, in the diet for the sick. In giving opiates to relieve the pain, we must not be misled, by the subsidence of the pain under them, to think that the trouble is at an end. With a subcutaneous injection of 0.01 gm. morphin, repeated at need after twelve hours, there is not much danger of masking the true clinical picture. Opium is liable to cause cardiovascular disturbance, the heart beat growing faster and the pulse weaker, with disagreeable sensations in the heart region.

77. **Childbearing and Nervous Disease.**—Meyer presents data which reaffirm that marriage, conception and pregnancy should be strictly warned against in all forms of nervous affections, not only in the interests of eugenics but to save the woman further harm. The hope that marriage and pregnancy may bring about a turn for the better in epilepsy, hysteria, exophthalmic goiter, etc., is very seldom realized; if improvement occurs it is scarcely ever permanent. As a rule, it soon yields to an aggravation of the original trouble. It must be remembered also that dementia praecox may develop at first as merely mild and apparently harmless nervousness, and under the stress of conception may flare up into a serious form. The least harmful from the standpoint of childbearing seem to be the symptomatic psychoses, amentia and the like, but even here an inherited taint should suggest possibility of recurrence under the stress of childbearing.

78. **Scarlet Fever.**—Barasch restricts treatment of scarlet fever to efforts to keep the patient's strength up and spare it all extra tasks, sustaining the body thus in its task of antibody production. Among 1,438 cases at the Urban Hospital at Berlin, 16.1 per cent. developed nephritis; 13.8 per cent. developed otitis; 1.3 per cent. endocarditis, and 5.9 per cent. rheumatism; there was sepsis in 9.1 per cent.; late involvement of the glands in the neck in 33.4 per cent., and in 16.4 per cent. of the total there was complicating diphtheria. The mortality was 15 per cent., but only 6.6 per cent. died later than the first three days after entering. Over half of the deaths were in children under 4. As a rule the hospital gets only the severer cases in an epidemic, and consequently the above figures must be regarded as favorable, testifying to the importance of the principles followed. The patients are dismissed at the end of six weeks, and return cases are sometimes encountered. About 150 patients were kept constantly in red light, but no benefit from this was apparent. In the 481 cases of swollen glands in the neck, 14.1 per cent. suppurated.

The sore throat was treated merely with an ice-bag or wet bandage to the neck and gargling with a mild antiseptic. Children too young to gargle had their throats merely wiped out several times a day; this relieved them so much that they generally made no objections after the first. After the first day the children are given a tepid bath every day and adults every second day. To ward off kidney complications, the diet is restricted to saltless food, mostly milk and gruel with apple sauce and raspberry juice. If the children are very hungry, rolls or zwieback with unsalted butter or crackers may be allowed. When there is a distaste for milk, it is given in the form of cocoa. If the kidneys show no signs of trouble by the nineteenth day, one egg is allowed. If this is borne without disturbance, a light mixed diet can be gradually resumed, with constant supervision of the urine. If nephritis develops and there is much blood in the urine, nothing but milk is allowed, or possibly with gruels. If there is not much blood, the milk-gruel diet can be resumed. It is kept up until the urine is free from albumin. The patients are kept always as warm as possible, to ward off nephritis, and are not allowed to leave the bed until the twenty-fifth day after subsidence of the fever, and not even then if there are complications.

81. **Naphthalin to Ward Off Vermin.**—Blaschko advises rubbing the body with 5 per cent. naphthalin-petrolatum to keep body lice away. Or half a teaspoonful of pulverized naphthalin can be shaken into the collar around the neck. It works down from here over the body, or it can be worn in a gauze bag. A little scattered in the bed will drive lice away. Head lice can be combated best by cutting the hair close. These measures against vermin are very important in prophylaxis of typhus, as the transmission of this disease by lice is a well established fact, and they may be concerned in the transmission of other diseases.

82. **Danger of Plague in Europe.**—Martini quotes Gottschlich's statement that he found virulent plague bacilli in the sputum of a man in Egypt the seventy-sixth day after an attack of secondary pneumonic plague. A chronic form of plague persisting for weeks with foci in the lungs has been found in rats on ships. These facts show that plague bacilli may reach Europe notwithstanding the long journey. Pneumonic plague seems to be a winter disease, contagion occurring more readily among the housed, and the bacilli acquiring greater virulence in passing from lung to lung. Fully 50,000 died during the epidemic in Manchuria in 1910 to 1911. When an acute lung disease develops in a robust young man and runs a fatal course in two days, pneumonic plague should be suspected. The sputum is thinner and sprays more readily than with other lung affections. All who have been exposed should be passively immunized; physicians and attendants require active immunization (Pfeiffer method). Both are harmless, he declares; he never witnessed any disturbances to mention after subcutaneous injection of a whole, killed, agar culture of Manchurian pneumonic plague bacilli. This was done on a large number of persons. He took the injection himself on two occasions, once with the Haffkine method, and he had considerable disturbance after this.

Medizinische Klinik, Berlin

January 3, XI, No. 1, pp. 1-28

85 *Abdominal Wounds. (Ueber Bauchschüsse.) J. Rotter.
86 Experiences at a Field Hospital. O. Nordmann.
87 *Treatment of Wounds. (Ueber Wundbehandlung.) F. Hammer.
88 Nursing in War. (Ueber die richtige Verwendungsstelle der Krankenschwestern im Kriege.) Riese.
89 *Treatment of Prolapse of Brain Tissue. (Gehirnprolaps nach Schädeldefekten.) O. Orth.
90 Functional Diagnosis of Blood Diseases. (Blutkrankheiten.) L. Hess.
91 *Proportional Leukocyte and Platelet Count. (Klinische Untersuchungen über das gegenseitige Verhältnis der Leukocyten- und Blutplättchenzahlen.) E. Maixner and A. v. Decastello.

85. **Abdominal Wounds.**—Rotter has been making a special study of gunshot wounds of the abdomen, 59 having been encountered in four field hospitals along the Aisne among a total of 1,218 wounded. The corpses found of men dying on the spot from abdominal wounds showed that the mortality from such injuries was fully 90 per cent., and among those living to reach the field hospital it was still 80 per cent. In the clearing hospital it was 40 or 50 per cent., and zero in the hospital in the home zone. The difference between the mortality of abdominal wounds in peace and in war thus is not so great as usually stated. His experience indicates that a spontaneous cure of a bullet wound of the bowel is possible only when the perforation is small, without prolapse of mucosa, or, with prolapse, only when adjacent tissue sticks to the spot and thus serves as a plug to the perforation. The perforation also must be solitary; there is little chance of this plugging process occurring at several points. Another and indispensable condition is that the bowel must be empty at the time it is perforated. In nine operative cases and necropsy of two there was only one case without several holes in the bowel and in this one case the man succumbed to diffuse peritonitis. In none of the other cases could spontaneous recovery have occurred, and consequently treatment should be the same for abdominal wounds under all circumstances, namely, early operative treatment if the case is seen in the first twelve hours after the injury. Later than this, the results of surgical treatment average no better than with conservative measures. Collapse alone need not deter from operating. Conditions as to asepsis, etc., are so good, he says, in the German field hospitals that no one need hesitate on this account. The advantages of operative treatment were illustrated particularly in one case; seven holes in the small intestine were sutured eight hours after the injury; in one place the gut had been severed almost completely. The man made a smooth recovery. In all the nine operative cases two or more holes were found in the bowel, the smallest large enough to insert the finger or thumb. The injury was found beyond repair in three cases, and 5 others succumbed to peritonitis or never rallied from the collapse. Of those given conservative treatment, 20 per cent. recovered, and the course of the cases showed that the bowel wall had not been perforated in most of these.

87. **Treatment of Wounds.**—Hammer emphasizes that the aim in dressing a wound should be to keep away further irritation from without, and keep the part at rest. The germs that have got into the wound require, like all vegetable bodies, a certain length of time to adapt themselves to their new environment; transplanting a plant always checks its growth for a time. The tissues have certain defensive powers which aid in impeding the proliferation of the germs at first. He says that Nature shows us in the scab the ideal to aim for in a dressing.

89. **Emergency Treatment of Prolapse of the Brain.**—Orth has found it of great advantage to close the gap in the skull at once with a periosteum-bone flap, suturing it in place with silk. Even if it is cast off later, it serves its purpose in warding off infection and injury of the brain until the defect can be permanently corrected.

91. **Relations Between the Leukocytes and the Blood Platelets.**—Maixner and Decastello conclude from their clinical and experimental experiences that the number of leukocytes and platelets rise and fall together. No connection with the numbers of red corpuscles was apparent.

Münchener medizinische Wochenschrift, Munich

December 29, XLI, No. 52, pp. 2433-2456

92 *Pneumococcus Tonsillitis. E. Leschke.
93 Disturbance in Growth and Deformity Ten Years after Injury of Wrist. (Wachstumsstörung und Deformität.) M. Herz (Sydney).
94 Simplest Methods for Examining the Urine for Salt, Nitrogen and Electrolytes. (Bestimmung des Kochsalzes, des Stickstoffs und der Elektrolyte im menschlichen Harn.) K. Wunder.
95 *Etiology of Verrucous Endocarditis. E. Reye. Commenced in No. 51.
96 Tetanus; 174 cases. Madelung (Strassburg).
97 Disturbances in Vision among the Wounded without Objective Findings in the Eyes. A. Bielschowsky.
98 Action of Regular and Dumdum Bullets on the Human Body. M. Kirschner, K. Stargardt, v. Meyer, F. Kraemer and F. Haenisch.
99 *Jet of Air in Prophylaxis of Tetanus. (Zur Verhütung der Tetanusgefahr durch intensive Luftbeströmung.) A. Heisler.
100 *Agglutination Positive after Vaccination against Typhoid. (Typhusschutzimpfung.) Kellermann.
101 *Treatment of Tetanus. Kellermann.
102 Oil from Birch Tar as Substitute for Peruvian Balsam in Treatment of Infected Soft Parts. (Oleum Rusci zur Behandlung infizierter Weichteilwunden.) H. L. Heusner.
103 Snow Blindness. (Schneeblindheit.) Gross.

92. **Pneumococcus Tonsillitis.**—Leschke reports a few cases to show how the pneumococcus may induce what seems to be an ordinary tonsillitis with or without general disturbance, pains in the limbs and depression, suggesting influenza. There is also a type with sepsis. All of these run a longer or more rebellious course than ordinary follicular tonsillitis. The *Diplococcus lanceolatus* is found on the tonsils.

95. **Verrucous Endocarditis.**—In Reye's 23 cases of verrucous endocarditis there was a history of recent acute articular rheumatism in 4 cases; chronic heart disease with articular rheumatism in the past in 5 cases; chronic tuberculosis in 7; chronic nephritis in 2; cancer in 3, and syphilis or pneumonia once each. His bacteriologic examination and inoculation of animals have apparently established that Schottmüller's endocarditis lenta is the later, severer stage of verrucous endocarditis. Both are the work of the *Streptococcus viridans* but only comparatively rarely does it progress to the severe form of the typical "slow endocarditis."

99. **Jet of Air in Prophylaxis of Tetanus.**—Heisler urges the playing of a jet of air on a wound liable to develop tetanus. Hot air is best as it hastens healing, but even a jet of room air from a bicycle pump or electric fan or bellows checks the development of the anaerobic tetanus bacillus.

100. **Agglutination After Antityphoid Vaccination.**—Kellermann has found that the serum of men vaccinated against typhoid gives a positive agglutination reaction; in three cases it was 1 to 200. Hence this test has no differential value in the diagnosis of typhoid under these circumstances.

101. **Hydrogen Dioxid in Treatment of Tetanus.**—Kellermann injected 10 c.c. of hydrogen dioxid directly into the wound following the path of the bullet and the man rapidly recovered under this and serotherapy. As the injection was painful he gave a little morphin beforehand.

Zentralblatt für Chirurgie, Leipzig

January 2, XLII, No. 1, pp. 1-16

104 Arteriovenous Anastomosis of Portal Vein Wards Off Necrosis of the Liver after Ligation of Hepatic Artery; Invariably Successful on Animals. (Die arteriovenöse Anastomosis an der Pfortader als Mittel zur Verhütung der Lebernekrose.) A. Narath.

Zentralblatt für Gynäkologie, Leipzig

December 26, XXXVIII, No. 52, pp. 1513-1576

105 The Round Ligament to Cover Stumps after Removal of Adnexa. (Bedeckung der Stumpfe nach Entfernung von Adnextumoren vermittels der runden Mutterbänder mit gleichzeitiger Fixation der Gebärmutter.) H. Thomson.

January 2, XXXIX, No. 1, pp. 1-16

106 *Exclusive Radiotherapy of Operable Cancer of Uterine Cervix. M. Hofmeier.
107 Woman as a Factor in the Strength of the Nation. (Volkskraft und Frauenkraft.) H. Sellheim.

106. **Radiotherapy Versus Operative Treatment of Incipient Cancer.**—Hofmeier calls attention to the tragic case of a woman of 29 with a small ulceration on the posterior lip of

the cervix of the uterus. The first symptom had been a little bleeding four weeks before the discovery of the cancer. It was so small and accessible that it was treated with radium and the Roentgen rays alone, and the cancer cells seemed to have been destroyed by the course of radiotherapy which lasted seventeen days. When the patient returned two or three weeks later it was found that the cancer was still growing in the depths of the tissues, and the whole was excised, but within four weeks there was recurrence in the pelvic connective tissue. The wasting of five or six weeks on the radiotherapy was of tragic moment for the woman's fate.

Zentralblatt für innere Medizin, Leipzig

January 2, XXXVI, No. 1, pp. 1-16

108 Advantages of the Continuous Bath in Treating Large Open Ulcerations. (Dekubitus und Dauerbad.) R. von Jaksch.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 27, XXXV, No. 138, pp. 3033-3048

109 *Diphtheria of the Skin. (Sulla difterite cutanea.) G. Bertelli.

January 3, XXXVI, No. 1, pp. 1-16

110 *Aleukemic Myelosis. (Le mielosi aleucemiche eritroblastiche dal punto di vista clinico.) G. Ghedini.

109. **Primary Diphtheria of the Skin.**—Bertelli's patient was a physician who had been treating a case of ordinary diphtheria. He had at the time a pimple near the lip and this developed into a true diphtheric lesion from which diphtheria bacilli were cultivated with disturbance of the general health. The throat did not become involved until several days later. Under antitoxin the general symptoms and the involvement of the mucosa retrogressed but the skin lesion did not seem to be affected by it until it was applied locally. Then the false membranes were cast off and recovery was soon complete. Bertelli compares this case with the few cases of cutaneous diphtheria on record.

110. **Aleukemic Myelosis.**—Ghedini describes eight different types and cites from the literature specimens of each.

Pediatria, Naples

January, XXIII, No. 1, pp. 1-80

111 Insufficiency of the Ductless Glands Common with Inherited Syphilis. (Insufficienza glandolare endocrina ed eredosifilide.) R. Vaglio.
112 Case of Achondroplasia. E. Palmegiani.
113 *Serotherapy of Epidemic Cerebrospinal Meningitis. G. Rutelli.
114 Skin Tuberculin Reaction in Diagnosis of Tuberculosis in 601 Children. G. Salvetti.

113. **Serotherapy of Meningitis.**—Rutelli declares that serotherapy is the only rational method in treatment of epidemic cerebrospinal meningitis in children. The serum should be injected directly into the spinal canal or cerebral ventricles, and in generous and repeated doses. In case no benefit is apparent, he advises giving a trial to antiparameningococcus serum. In the 18 cases he reports, all in children, all recovered but 3. He made from two to ten injections in the course of one to four weeks. The total amount injected was from 20 to 270 c.c. He calls special attention to 2 cases in which the children recovered under the serotherapy although it was not commenced until the ninetieth day of the disease and the children were extremely debilitated. Also in 5 cases in which the disease was at the fifteenth day when the first injections were made. In 2 others the serotherapy was commenced in three or four days but the children died. He injects about 10 or 20 c.c. of serum for an infant and 30 c.c. for a child 2 years old. In older children he injects a quantity about equal to the amount of cerebrospinal fluid withdrawn.

Policlinico, Rome

Surgical Section, XXI, No. 12, pp. 557-600

115 Bacteriologic Examination of Bones from Cadavers with a View to Transplanting. P. Desderi and G. Serafini.
116 Successful Operative Treatment of Radial Paralysis after Fracture of the Humerus. R. Mosti.
117 Experimental Gastric and Duodenal Ulcers in Twenty-One Dogs after Severing the Sympathetic. R. Brancati. Commenced in No. 11.
118 Spontaneous Perirenal Hematomas. A. Bevacqua.

January 3, XXII, No. 1, pp. 1-40

119 Improved Technic for Examining Urine Sediment. (La fissazione dei sedimenti urinarii agevolata mercè l'impregnazione con siero di sangue umano o con giallo d'uovo e la loro colorazione a secco col "processo rapido" di Pappenheim.) C. Minerbi and W. Vecchiati.
120 *Effectual Treatment of Purulent Pleurisy; Two Cases. (Trattamento della pleurite purulenta, col metodo Kawahara.) T. Silvestri.

120. **Purulent Pleurisy.**—Silvestri has long treated cases of purulent pleurisy by clearing out the pus and rinsing the cavity with air. The procedure is so simple that it is within reach of every practitioner. The instrument used has two openings and air flows in as the fluid is drawn out, so there is no sudden change in pressure inside the chest. The air bubbling through the pus in the chest renders it less viscid and it can thus be drawn out more readily, without necessity for diluting it with fluids introduced from without. Silvestri has been using this method since 1896, but an account of it was published first by another, so it goes by the name of Kawahara's method. He describes here two typical cases, one in a boy and one in a man of 49, to illustrate the advantages of the method. He uses the Potain apparatus, pumping in more air at need to soften up and loosen the pus in the cavity.

Grèce Médicale, Athens

December 1 and 15, XVI, No. 23-24, pp. 45-48

121 Carbon Dioxid Snow in Treatment of Condylomas; Ten Cases. (L'acide carbonique solide dans le traitement des condylomes acuminés ou crête de coq.) N. P. Vouliéris.

Brazil-Medico, Rio de Janeiro

December 15, XXVIII, No. 47, pp. 429-436

122 Brazilian Species of Trichosomas. (Sobre as especies brazileiras do genero Capillaria Zeder, 1800.) L. Travassos.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 16, pp. 1045-1124

123 Colloidal Nitrogen of the Urine in Diagnosis of Cancer. (De kolloidale Stikstof van de urine.) P. de Bloeme, S. P. Swart and A. J. L. Terwen.
124 Roentgen Treatment of Tuberculosis of the Lymph Glands. H. Verploegh and C. L. W. Ruys.
125 Medicinal Treatment of Senile Cataract. (Behandling van ouderdomsstaar met geneesmiddelen.) P. J. Waardenburg.

No. 17, pp. 1125-1196

126 Hypertrophy of the Prostate. I. H. Kuijjer and D. Schoute.
127 Hygiene of Sitting Posture. (De leuning met twee-armigen hefboom als middel tot verbetering van de hygiene van het zitten.) A. Lorenz.

No. 18, pp. 1405-1480

128 Modern Superstitions. II. (Hedendaagsch Mirakelgeloof.) G. van Rijnberk.
129 Acute Myelogenous Leukemia. W. H. Van Os.

No. 19, pp. 1481-1567

130 Theoretical Study of Emmetropia. G. J. Schoute.
131 Present Status of our Knowledge in Regard to Hare-Lip and Similar Deformities. (Hazenlip en scheeve gezichtsspleet volgens nieuwere onderzoekingen.) J. A. J. Barge. Commenced in No. 18.
132 Pseudo-Diphtheria Bacilli. C. M. Mol. Commenced in No. 16.

Nordisches medizinisches Archiv, Stockholm

XLVII, Internal Medicine Nos. 1-4. J. G. Edgren Festschrift

Edgren Festschrift.—The sixty-fifth birthday of the professor of internal medicine at the University of Stockholm was celebrated by the presentation of this special and bulky volume of the *Archiv*. The title page states that it represents Nos. 1 to 4 of the 1914 issue of the medical section and Nos. 1 and 2 of the 1915 volume. It contains thirty-three articles by his friends and former pupils. All of them are either written in German or accompanied by a long German summary, with the exception of one article in French and one in English.

133 *The Red Corpuscles in Advanced Pulmonary Tuberculosis, Especially in Regard to Amyloid Degeneration. A. Gullbring.
134 Aneurysm of the Aorta Simulating Spinal Tumor. F. Kaijser.
135 Deformity of All the Finger Nails and Toe Nails, Developing at Age of 17. (Onychogryphosis.) J. Strandberg.
136 Spinal Cord Tumor. (Rückenmarkstumor.) G. D. Wilkens.
137 Paratyphoid B Epidemic. A. C. Nilsson.
138 *Segmental Innervation of the Abdominal Muscles. (Quelle est l'innervation radiculaire des muscles abdominaux?) G. Söderbergh.
139 Alcohol and Epilepsy. C. Sebardt.
140 Traumatic Neuroses. J. Billstrom.

141 Purpura with Hemorrhagic Vesicles in Boy of 10. H. Lindvall.
142 *Variations in Growth and Virulence of Cholera Virus. P. G. Olsson.
143 Contribution to the Question of the Teratomata: Case of Epignathus. C. F. Heijl.
144 Shape of the Posterior Surface of the Human Cornea. (Form der hinteren Hornhautfläche.) W. Nordenson.
145 The Nitric Acid Test for Albumin. (Heller's Albuminprobe.) C. Cronquist.
146 Plague at Stockholm about the Seventeenth Century. (Pest während der Jahre 1657 und 1710.) K. Linroth.
147 *Examination of the Lungs. (Einige Hauptzüge der gewöhnlichen Lungenuntersuchung.) C. E. Waller.
148 *Acute Intoxication with Veronal. K. Mattisson.
149 Mixed Tumors in the Mediastinum. (Mediastinala blandningssvulsterna.) F. Lindstedt.
150 Content of Blood not Always an Index of Absorption of Sugar. (Zuckerresorption und Blutzuckerspiegel.) G. Bergmark.
151 *Treatment of Dangerous Hematemesis. (Om behandlingen af lifsfarliga magblödningar.) H. Lindberg.
152 The Changes in the Cortex of the Brain with General Paresis. (Om förändringarna i stora hjärnans bark vid paralysie générale.) H. Marcus.
153 *Treatment of Abscesses in the Lungs. (Behandlung eitriger Lungenaffektionen.) H. C. Jakobæus.
154 Congenital Stridor. (Der infantile Larynxstridor.) W. Wernstedt.
155 Case of Associated Splenomegaly, Anemia and Infantilism. L. Wolff.
156 Symmetrical Cyanosis of the Hands and Feet; Cure under Thyroid Treatment. (Acrocyanosis — Schilddrüsentherapie—Genesung.) A. Josefson.
157 Vital Staining of the Red Corpuscles. (Om vitalfargning af röda blodkroppar.) O. Lindborn.
158 *Diagnosis and Treatment of Sagging Stomach. (Gastroptosens diagnos og behandling.) A. Troell.
159 Salvarsan in Treatment of Mercurial Stomatitis. J. Almkvist.
160 Free Thrombus in the Heart as Cause of Sudden Death. (Freie Herzthromben, speziell im linken Vorhof, als Ursache plötzlichen Todes.) J. Tillgren.
161 The Blood Findings in Case of Dementia Praecox with Periodical Fluctuations. (Blodundersökningar vid ett fall af dementia praecox.) G. Kahlmeter.
162 Test for Elastic Tissue in the Sputum. (Einfache Methode zum Nachweis von elastischem Gewebe im Sputum.) I. Hedenius.
163 Chondrectomy for Emphysema of the Lung. (Fall von nach Freund operiertem Lungenemphysem.) E. O. Hultgren and E. Key.
164 Diabetes Mellitus Following Contusion of the Liver Region. E. Salen.
165 The Metabolism, Especially the Metabolism of Minerals, in Two Boys. (Zur Kenntnis des Stoffwechsels und bes. des Mineralstoffwechsels im Knabenalter.) I. Jundell.

133. **The Red Corpuscles in Advanced Tuberculosis.**—Gullbring tabulates the findings in 131 patients in the third stage of pulmonary tuberculosis. The largest numbers of reds were in the cases with symptoms suggesting amyloid degeneration. The signs of amyloid degeneration are the hard palpable liver and the changes in the nails known as "watch-glass nails." Holmgren called attention in 1913 to this amyloid syndrome as he called it; he had found it pronounced in 85 per cent. of the cases of amyloid degeneration; in 88 per cent. of the patients with nails showing these changes there were unmistakable signs of amyloid degeneration. At necropsy in 32 cases Gullbring found pronounced amyloid degeneration in every case in which during life the liver could be felt large and hard and the nails were of this *Uhrglas* type. He excluded from the 131 cases listed here all those with hemorrhage, diarrhea or noticeable dyspnea or fever. The only American work cited by Gullbring is Swan's in THE JOURNAL, 1904, xlii, page 696.

138. **Innervation of Abdominal Muscles.**—Söderbergh compares what others have written on this subject with his own findings. He has noticed signs of paresis in certain muscles with tumors compressing certain roots, and thinks that analysis of such cases would supply data enabling us to locate a spinal tumor long before the symptoms usually depended on for the topical diagnosis have developed.

142. **Variations in Cholera Virus.**—Olsson's report of his extensive cultivation and study of cholera germ-cultures fills 110 pages and is accompanied by five full-page plates.

147. **Examination of the Lungs.**—Waller mentions a number of minor points he has found useful, such as asking in detail after the health of the father, the mother, the brothers, the sisters and children, instead of merely inquiring whether there is tuberculosis in the family. A negative general reply is usually given while inquiring separately after the various members of the family revealed tuberculosis in near relatives in 70 or 80 per cent. of all his sanatorium cases. In inquiring as to the spitting of blood, other causes for it than tuberculosis must always be borne in mind. Pulmonary tuberculosis does not always entail coughing, at first. Ask the patient whether he has occasion to hawk at times, and if he brings up anything; also if he cannot sleep comfortably in certain positions; many of the tuberculous are treated for rheumatism alone.

148. **Acute Veronal Poisoning.**—Mattisson reports three cases with the elimination of the drug in the urine constantly supervised. Fully 90 per cent. of the drug was cast off in this way but the elimination proceeded very slowly, continuing up to the eighth, tenth and twelfth days in his cases.

151. **Dangerous Hemorrhages from Gastric Ulcers.**—Lindberg tabulates the details of 68 cases of gastric ulcer with hemorrhage so severe as to raise the question of an emergency operation; 5 died. These 68 cases were encountered at Faber's clinic at Copenhagen among 550 patients with ulceration in the stomach. All the 68 patients were given conservative treatment alone and in the 5 fatal cases necropsy showed that conditions could not have been remedied by operative measures. Comparison of all this material with the operative cases on record from other clinics has convinced Lindberg that surgical measures are never indicated in case of an acute hemorrhage from the stomach or adjacent bowel. On the other hand, recurring hemorrhages, especially when the anemia keeps up during the intervals, require operative treatment and it should not be delayed too long. Stimulants and saline infusion increase the tendency to hemorrhage. The foot of the bed can be raised, but morphin should not be given, not even when there is painful spasm of the pylorus. A subcutaneous injection of 400 c.c. of a 10 per cent. solution of gelatin can be given daily, and Lindberg has been very favorably impressed with the efficacy of rinsing out the stomach with a 1 per cent. solution of ferric chlorid. He pours 100 gm. of this into the stomach through a soft stomach tube and then pumps it out again after a few minutes. This is repeated until the fluid comes away clear, which is generally the case after four or five rinsings. Along with this he injects the gelatin.

153. **Abscess in the Lung.**—Jacobæus applied artificial pneumothorax after evacuation of the acute abscess in 3 cases and with marked benefit in 2; the other patient is still under treatment. In 2 cases of old foreign-body abscess he improved conditions materially by keeping the patient in bed for a week or so with the foot of the bed raised 30 cm. and the patient lying on the sound side. All this improved conditions for drainage so that the disturbances subsided. Afterward he slept nights in this position and when the disturbances returned again a few months later they were improved again by a course in bed as before. The hope has not yet been given up that the scrap of fir in the lung may still be coughed up.

In another foreign-body abscess there was no trace of anything wrong in the bronchi; the abscess was in the left hilus and what seemed to be a scrap of bone was finally coughed up. The absence of any lesion in the bronchi and of any history of a foreign body render plausible the assumption of a concrement developing in the lung. In 2 other cases there was a chronic abscess; one was opened up and cured. The other was of fourteen years' standing and an unsuccessful attempt to apply pneumothorax treatment did not avert the fatal outcome and possibly hastened it. In 2 cases of acquired bilateral bronchiectasia of ten years' standing, the phrenic nerve was severed on one side, followed by resection of part of the chest wall. The benefit from the phrenicotomy seemed to be marked, but the second patient did not survive the operation on the chest wall.

158. **Diagnosis and Treatment of Gastroptosis.**—Troell devotes 50 pages to the details of eight cases given operative treatment, without benefit in two. His conclusions are that to date we cannot state definitely what is pathologic in such cases, and that further study is needed.

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166 *Tumors in the Sympathetic Nervous System and Suprarenals. (Om svulster i det sympatiske nervesystem og i binyrernes medullaris—og særlig om de maligne neuroblastomer.) F. Harbitz.

167 *Injury from Competitive Athletics; Seven Cases. (Varig skade paa helbreden forvoldt ved idrætsøvelse.) P. Torgersen.

168 Improved Technic for Determination of the Reaction of the Urine. H. F. Høst.

169 *Chronic Intestinal Stasis. S. Widerøe.

166. **Tumors in the Sympathetic Nervous System and Suprarenals.**—Harbitz refers in particular to the tumors originating in the sympathetic nervous system and medulla of the suprarenals; they are made up of undifferentiated embryonal nerve tissue and are of extremely malignant growth. In order to understand their development, the embryology of the sympathetic nerve must be comprehended, as he explains in detail, illustrating his remarks with four cases from his own experience: a boy of 3 who did not survive the removal of the large neuroblastoma on the front of the sacrum; a six-months' infant apparently healthy until at five months he developed obstinate diarrhea and the abdomen protruded as the liver became much enlarged. Necropsy revealed a primary cystic tumor in the suprarenal medulla with metastases in the liver. In the third case the neuroblastoma in the sacral region was as large as the trunk of the four-months' fetus. The fourth was a fetus weighing 1,150 gm., the teratoma in the sacral region weighing 490 gm.

There are nearly fifty cases of true neuromas on record, he says, and almost all were in the sympathetic nervous system. This form of tumor does not generally incline to infiltration or metastasis. The malignant type of ganglioneuroma occurs only in children, as a rule, such tumors seeming to be less malignant in adults. The third type of tumors belonging in the category under discussion are the so-called paragangliomas or chromaffin tumors, located in the medulla of the suprarenals or carotid gland, of which from twelve to fifteen cases have been published. They are typical epithelial tumors on the borderline between benign and malignant growths. Sometimes they are merely diffuse hyperplasia and they may develop in persons with a tendency to multiple neurofibromatosis. The cases of this type on record are analyzed, including four cases of tumor in the carotid, all in adults, and all were removed without much difficulty. In conclusion Harbitz reports the case of a man of 47 with a large hypernephroma in the left kidney with numerous metastases, a cystic adenoma in the pancreas, a chromaffin tumor in the suprarenal region and another in advanced degeneration in the right kidney region. Most of these numerous tumors were of widely diverse structure. Thirteen illustrations accompany the article.

167. **Injury of the Previously Sound from Competitive Athletics.**—Torgersen comments on his experience that patients seldom or never connect any morbid manifestations later in life with athletic strain during their younger days, and the physician rarely inquires in regard to such antecedents. This is his explanation of the scanty literature in the Scandinavian countries on permanent injury from overstrenuous exercise. In the previously healthy the injury soon rights itself, as a rule, but that this is not always the case he shows by seven instances which he cites from a much larger experience, and is convinced that if physicians will bear this possibility in mind, many more such cases will be encountered.

He emphasizes anew the imperative importance of medical control of gymnasium work and athletic sports in general, and urges that physicians should train themselves for this task so that sports and athletics may do the greatest good to the greatest number without danger of overstrain. In the first of the cases cited a previously healthy youth of 16 in training for a rowing race collapsed in a neurasthenic condition just before the race. The neurasthenia lasted for some time and ten years later he developed a psychosis. It is possible that medical control of the "training" might have spared the nervous system all this derangement. Another exceptionally strong and robust man of 20 after one week of training took part in a rowing match and was exhausted at the close, pale, trembling and vomiting, and for years afterward complained of recurring pains in the heart region and difficulty in breathing even after slight exertion. The trainer was a good executive and instructor but he lacked the fundamental knowledge of physiology which would have prevented his consenting to a man's entering the race with only one week's training. In some of the other cases also the training was crowded into a few days and the men afterward proved unfit for military service; one developed chronic neurasthenia, blasting his career. Another young man after a good course of training had slight tonsillitis the morning of the big race, but felt well, and temperature and pulse were normal. He collapsed within 300 feet of the goal with signs of heart weakness and during the years since then he often complains of shortness of breath and a sensation of oppression. Valvular disease developed in three others after training for ski work or for all-round athletics; one student of 20 collapsed during a race, the others collapsed while keeping up vigorous gymnasium exercise and working at a fatiguing business during the day.

169. **Chronic Intestinal Stasis.**—Widerøe reviews his experience with 23 cases of this nature in his service since 1912. The ages of the patients ranged from 17 to 71 and all but 5 were women. An operation was deemed necessary only in 3 cases, and in these the appendix and the genital organs were found normal but the cecum was very large and loose, with adhesions. In 16 cases the family physician had sent the patient to the hospital urging an immediate operation, but in all the cases the trouble was merely chronic intestinal stasis. Widerøe reviews the various disturbances which stagnation of the feces is liable to entail; he also analyzes the various factors liable to cause the chronic stasis, citing the details of a number of cases. In his own experience the patients paid no heed to their chronic constipation, and did not mention that intervals between stools of from two to eight days were the rule. In 2 cases there were symptoms of incipient peritonitis and in another an attack of colic. In 4 cases the vague pains in the stomach, back and lower abdomen with dysmenorrhea led to the diagnosis of gynecologic trouble. In 2 others dyspepsia was the main disturbance. Roentgenoscopy may be necessary in case a kink or band is suspected as the cause of the constipation. Mothers should be warned that children may be constipated even with a daily passage, and that this tendency to constipation may increase as they grow up, especially in girls. They must be taught to heed the slightest impulse to defecate, and be trained in regular habits in this respect. A few gymnastic exercises, including deep breathing, with a bland diet, will generally regulate bowel functioning in the young. At all ages, the food should contain nothing to irritate the bowel, no alcohol, coffee, sharp condiments, etc., and tobacco should be used sparingly if at all. Mayr advises exercising the abdominal and trunk muscles three times a day, by deep breathing, by rising from the horizontal to the sitting position without the use of the arms, bending the trunk forward and back and sideways during deep breathing, and bending the hip and knee, standing on the other foot. Widerøe adds that half a glass of cold water, fasting in the morning, with or without half a teaspoonful of cooking salt or Carlsbad salts may prove useful. Liquid paraffin is found of great benefit in some cases. It is not absorbed, he says, while it is not toxic in the least. It acts mechanically and has never failed him. The dose is one or two tablespoonfuls three times a day on an empty stomach. It has no taste but the oily consistency is repugnant to some; if so, it can be shaken up with a little water into a fine emulsion and be flavored with lemon juice.

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170 Alcoholism from Physician's Standpoint. (Alkoholismens problem set fra lægens standpunkt.) K. A. Heiberg.

171 Pulsating Exophthalmos in Woman of 78. A. Damsgaard.